American Journal of Public Health
and THE NATION'S HEALTH

Volume 41 November, 1951 Number 11

Public Health and "Socialized Medicine"*

WILLIAM P. SHEPARD, M.D., M.A., F.A.P.H.A.

President, American Public Health Association; Third Vice-President, Health and Welfare, Pacific Coast Head Office, Metropolitan Life Insurance Company, San Francisco, Calif.

GROWTH OF THE PUBLIC HEALTH PROFESSION

IN the years since the last western meeting of the American Public Health Association, the profession of public health has grown up. It is a world-wide profession involving many disciplines, among them: medicine, dentistry, engineering, nursing, the various laboratory sciences, statistics, education, and administration. In this country and Canada there are eleven schools of public health devoted solely to the thorough training of career people in the public health field. There are more full-time, well trained public health people in North America than on any other continent. The demand for such people in recent years has far exceeded the supply. There are about 3,000 vacancies and potential vacancies in public health in this country today. Public health "know-how" has become one of our most popular exports and staffs of the Public Health Service and of health departments are being stripped to provide help to our allies throughout the world.

The shortage of qualified public health personnel is partly due to the fact that in growing up into a profession we have clearly defined standards of training and experience in the several subspecialties in public health; have set criteria for accreditation of graduate schools of public health; have succeeded in practically eliminating inadequate schools; have disseminated the desirable educational qualifications of candidates to appointing bodies near and far; have developed and promoted an objective type of examination for the enlightened selection of candidates through our A.P.H.A. Professional Examination Service; and have succeeded surprisingly well in upholding high standards of training for those who would enter our profession. Thus, the day is passing when any physician without special training can qualify as a health officer or any dentist, engineer, or nurse can get a full-time job in a health department.

The American Public Health Association has had much to do with this growth in size, professionalization, and competence. With it has come increased responsibility and influence in the national and international health picture. Indeed, the weight and importance of this influence has become so great that it requires more of our time and thought, particularly in these troublous days, than

* Presidential address to the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., November 1, 1951.

ever before. It seems to justify a few moments of our time to reflect upon it, and upon our relationships with other agencies of national influence, especially with organized medicine.

RELATIONSHIPS WITH ORGANIZED MEDICINE

As a former country doctor, with a long line of forebears who were practising physicians, I have long been interested in the relationships between organized medicine and organized public health, and in the relationships between the individuals in each profession. I have always considered myself as practising the profession of medicine, devoting myself solely to the specialty of public health.

The history of the amazing development of the public health movement in this country shows clearly that physicians either singly or in groups have been rather largely responsible for the establishment and support of health departments, and for the major national voluntary health agencies now exerting so potent an influence on the nation's health. It is almost axiomatic that strong health departments exist where local physicians provide interest and support. Conversely, weak or no health departments are found where local physicians are disinterested. It is almost equally true that good health departments can remain progressive and alert to community needs, or be blocked and frustrated, depending upon the attitude of the physicians in the community. The reasons for this are sometimes hard for the 60 per cent nonmedical members of the public health profession to understand. Nevertheless, it is historically true, and probably stems from the fact that the health department or the voluntary health agency cannot operate successfully without the willing and cooperative services of physicians, and from the fact that both the public health profession and the medical profession are primarily interested in the health of the public.

At the national level, we in public health have rarely had better relationships with organized medicine. Many of the officers of the American Medical Association in the past few years have been alert to national and local health needs and to the objectives of the public health movement. They have selected a staff at national headquarters, many of whom are well versed in public health administration, health education, and the health needs of the public. The Inter-Association Committee on Health, consisting of staff and officer representatives of the American Public Health Association, the American Medical Association, the American Dental Association, the American Hospital Association, the American Nurses Association, and the American Public Welfare Association, has met regularly during the past two years and the American Medical Association representatives have never missed a meeting. This Committee has gone a long way to delineate areas in which all six organizations can agree and to debate objectively those areas in which they disagree. The public, and especially the legislative groups of the nation, have benefited from its counsel.

RELATIONSHIPS WITH LOCAL PHYSICIANS

At the local level there is likewise, but for rare exceptions, an excellent relationship between state medical societies and state health departments and between county medical societies and local health departments. There is, however, one area of confusion. This has sometimes led to disagreement which has been inimical, both to medicine and to public health. It has grown worse during the past few years. It is about this I would speak, hoping to clarify confusion and to lessen misunderstanding to the mutual benefit of both professions and primarily to the benefit of the public.

From its beginnings, the public health

profession has occasionally been beset by a few physicians who appear to fail to see the reasons for public health and whose influence at one time or another becomes sufficient to impede seriously the important objectives of the health department. In recent years it has become apparent that these physicians tend to confuse public health programs with what they call "socialized medicine." Some apparently regard public health work as an insidious attempt by government to control the practice of medicine. They are likely to regard the health officer as the devil's advocate of government control of medicine. They persist in attempts to circumscribe public health activities with a list of minimum functions beyond which the health agencies shall not go without threat of opposition by organized medicine. Some have basic opposition to any community health service outside sanitation and communicable disease control. Over the years, this has caused embarrassment and frustration to many health officers. It is especially serious today because it places public health and medicine in apparent conflict before the tribunal of public opinion, and tends to discredit both.

The misunderstanding in this country, at least, seems to arise from several causes. One is the woefully weak teaching of public health and preventive medicine in medical schools, especially a few years ago when the department of preventive medicine and public health had little chance to compete for student interest with the greater glamor of the clinical subjects. Many of our more recent graduates get an enlightened viewpoint on public health.

Another cause is the fact that not all individuals, including physicians, have the same social viewpoint or the same degree of social consciousness.

Perhaps another of most recent importance is the highly allergic state developed by some physicians toward anything which they can label "socialized medicine." They "see an Indian behind every bush" and may unwittingly attack friend and foe alike.

Finally, it has turned out to be unfortunate that the U. S. Public Health Service is no longer under a cabinet officer but under one whose political convictions are in sharp conflict with those of the majority of the medical profession. This further links public health with "socialized medicine" in the minds of those who fail to distinguish between the relationships of medicine to society on the one hand and the threat of government control of the practice of medicine on the other.

SOCIAL ASPECTS OF MEDICINE

Briefly, to orient this discussion, let us consider the social aspects of medicine. By that I mean the relationships of medicine to society, and society's relationships to medicine, including society's traditional forms of utilizing medicine. I do not mean socialism, communism, collectivism, or any other political or social ideology.

Medicine cannot exist in vacuo. It has inherent, factual, and dynamic relationships to society. For this reason it has always been subject to extensive usages by society to a greater extent than most other professions. It has always been expected to treat the poor and rich alike. It has always been expected to respond as readily to mass emergencies as to individual calls for help. So socially responsible has it been, in fact, that this ready response is expected to supersede any thought of remuneration, thus forcing the physician into the unbusinesslike system of "soaking the rich to pay for the poor." To correct this precarious situation, we now resort to a variety of even more systematic social uses of medicine by teaching people to anticipate their medical costs through various forms of prepayment plans; by expecting communities

to build and support hospitals in which the physician can do better work; and to provide through taxes complete medical and hospital care for the indigent, the mentally ill, and the tuberculous. All this is being done with the blessings of organized medicine and often at its instigation, as the only sensible solution to community health problems otherwise overwhelming.

There is every likelihood that medicine will be subject to even further organized uses as society becomes more aware of the values and components of good medical care. And it can be done as it has usually been done in the past, when medicine takes the lead, to the great benefit of both medicine and the public.

It is not society's expectations of medicine that we fear and oppose. It is government control of the practice of medicine.

Medicine's heavy responsibilities to society have been recognized from the very beginning. The tribal priests and the medicine men of the aborigines were persons set apart. They had direct access to the chief and exerted important political influence. The great physician of Greek mythology, Aesculapius, was the son of Apollo. His descendants on earth were the Asclepiadae who combined healing with priesthood in the Temples of Cos, Epidaurus, and Pergamos. Even before the day of Hippocrates, a rigid code of ethics looking to the public good rather than the good of the profession was the guiding principle of those practising healing. I know of no other profession which has taken its ethics so seriously, or been so deeply influenced for so long by its self-imposed code as the profession of medicine.

I suspect there are some who will say that the inroads of the vast technology of science upon the practice of medicine have pushed ethics aside. Nevertheless, I submit that the youth of today does not commonly enter the long arduous years of preparation for medicine solely to learn the wonders of science and to make a fortune. The great majority are still motivated by a desire to be valuable to the human race and in so doing are willing to accept a rigid ethical code. Medicine is still a priesthood. Many an Asclepiad still walks the earth today motivated by the added high principles of Hippocrates to: "enjoy my life and practice my art, respected by all men and in all times."

Society has recognized the unique values of the medical profession from the beginning. Few professions have been freer of legal restrictions. Few have been given greater liberty and less governmental supervision. The physician's certification to the fact of birth is prima facie evidence establishing age and parenthood. The physician's certification of death is rarely questioned as to the cause, time, and place. The doctor's statement alone usually suffices to bring disability benefits. In hospital and clinic, his word is law. So long as he can keep at peace with his state licensing board, he can almost practise as he pleases, accountable to no one but his conscience and his patients. He is excused from jury duty, and in most cities may even park his car where he pleases! The public has given enormous support to the medical schools and they have responded by turning out the best trained physicians the world has yet known.

This is indeed a proud heritage! Under it we have flourished in freedom and scientific progress. Especially is this true in the United States and Canada where democracy and free enterprise have developed the best medical care ever enjoyed by mankind. Medicine has continually repaid its debt to society by bringing the human race undreamed of benefits in the prevention of illness, rescue from suffering, and the tripling of the life span. It is a heritage of freedom which must not be destroyed!

MEDICINE'S STRUGGLE—ITS IMPORTANCE TO PUBLIC HEALTH

Yet we have witnessed in one generation the people of one nation after another succumbing to the glittering promises of collectivism, unwittingly losing their freedom, and necessarily subjugating their medical professions to stultifying government control. We have seen just such a threat in this country in the past few years. We in public health have witnessed organized medicine's vigorous battle against that threat, and though sometimes deploring the methods used, have been glad to help in many effective ways. How much more we could help, but for the misunderstanding between a few physicians and a few health officers!

There is no reason this heritage of freedom for physicians and patients alike need ever be seriously endangered providing:

a. Its value is understood by the public.
b. The public is satisfied with the way medicine is practised.

Public understanding and satisfaction are the best antidotes for the glittering promises of politicians!

FACING FACTUAL DEFECTS IN MEDICINE

Proud as we are of medicine's freedom and progress, however, there are a few things wrong. Present leaders of organized medicine are the first to acknowledge this.[1] These leaders no longer assume a negative attitude. They no longer necessarily stand for the status quo. They have now become alert to the urgent need of some changes dictated by society's justifiable concern with certain problems of medical care and public health.

These problems are almost solely concerned with medical economics, largely costs and accessibility; and with public health. Progress is being made in medical economics. Costs and inaccessibility of medical care are being alleviated through various types of voluntary prepayment plans, through grievance committees in county medical societies, and through deliberate efforts by medical schools and by local communities to make rural practice more attractive to the young physician. The public is not yet fully satisfied, but it will be patient if tangible progress can soon be demonstrated.

There still remains in the public health field, however, an urgent need for better understanding between certain individual practising physicians and their health officers. Without it, the public will never be satisfied with its own efforts to solve mass health problems requiring organized community action.

For example, a public once awakened to the fact that the terrific burden of tuberculosis, venereal disease, diabetes, and even some cancer and heart disease, is preventable and can be lightened, will not long be complacent when they find that local physicians oppose organized methods of case finding. And awaken they will, if they have not already.

The existence of a hundred crippled children in a state who could be helped with proper medical care is not a convincing demonstration that all who need it may obtain such care.

The average citizen is not impressed with his physician's concern for the health of the public when he is told by him that a local health department means "socialized medicine"; while at the same time the National Congress of Parents and Teachers has joined some 50 other national organizations to promote health departments for the nation.

There is something wrong when a few physicians in a community advise a committee of public-spirited citizens that a visiting nurse service might be a good thing providing it has nothing to do with the health department.

It is not reassuring to the public when a state medical society passes resolutions opposing a well operated state health department program for the

care of crippled children without proposing a better method; or, when a state medical society appears to be indifferent to the medical needs of the dependents of men in the military service by opposing reëstablishment of the Emergency Maternity and Infant Care program without proposing something better.

It does not make the health officer feel like championing the cause of the private physician when that physician sponsors legislation designed to limit public health activities to five or six basic minimum functions, thus denying him the right to exercise his legal responsibilities and to guide the community in attacking new and pressing problems with which it is deeply concerned.

These are but a few examples of misunderstanding between some practising physicians and some health departments. They are not new. Fortunately, they are relatively rare. Yet in times of stress like the present, they become serious and destructive. On the one side we see our physician colleagues embattled against government control of the private practice of medicine. On the other side we in public health, who could do much to help, find ourselves attacked with the foe.

I would be the first to admit that fault often lies with the health officer. Too often he has failed to explain his objectives and the needs of the public to his medical colleagues. He may not fully appreciate the extent to which the success of his program depends upon physicians' coöperation. Too often he has had insufficient training and experience to fully comprehend his proper functions, and to know how to present his case.

In any event, this is not the time to fall at each others' throats when we face a great common danger: adverse public opinion, which could result in serious impairment of all health services. It is not the time to disagree when the nation faces grave threats, both internal and external, to its democratic processes. There are no disagreements between physicians and health officers under an authoritarian form of government!

HOW PUBLIC HEALTH CAN HELP

Whether we like it or not, there is a sizable element of the public which is seriously critical of medicine as it is practised in this country today. No one knows this better than the health officer. He can see the difference between those social sycophants who cry for free medical care, free housing, free food and free pensions, caring not that by so doing they throw away their freedom, and those who believe they have a reasonable grievance against the way medicine is practised. It is the health officer who has his finger on the pulse of the public and who knows better than most what they really need and how much they will eventually lose under government control of medical practice.

"The local health department is the basic service unit in the administration of public health. Through daily contact with the public the local health department obtains firsthand information concerning local health needs, and is responsible for providing its community with direct services. A unique combination of medical, dental, nursing, engineering, and other technical services, together with statistical, educational, managerial, and administrative skills, is made available through a full-time efficient and well staffed local health department. Its personnel is specially trained to utilize the health sciences in the public interest through effective community organization."[2]

The dividing point, if we must have one, between public health and the private practice of medicine is that point at which a health problem in a given community is of sufficient interest to a sufficient number of citizens so that some type of community organization is

required to solve it. Obviously, no single individual or physician can provide a city with a pure water supply, nor can he provide universal pasteurization of milk, nor proper waste disposal. These are community chores. All the doctors together cannot bring about smallpox and diphtheria immunization of 85 per cent of the child population, though the doctors can be of great help. It requires community organization, best led by the health officer. In most instances the practising physicians of the community are among the first to recognize these problems and are at the forefront of the community organization designed to seek a solution. It is the rare, short-sighted physician who opposes these movements.

In recent years, as the problems of acute communicable disease and environmental sanitation have become less serious through good public health administration, it has been inevitable that other problems would enlist the interest and the action of the community. Thus we find increasing concern among the public with the problem of aging and its concomitant of chronic diseases; with the early detection and prompt treatment of cancer, tuberculosis, and diabetes; with the increasingly high proportion of deaths from heart disease and accidents; with expanding populations, migrating populations, and the critical health problems of mushrooming defense areas. The community is bound to make some effort to combat these common and serious problems. Those efforts will be less clumsy, less misdirected, less oblivious to the value of existing facilities, if the movement is guided by the health officer with his trained staff, and if in that guidance he has the understanding and support and wisdom of the practising physicians of his community. For the noncommunicable, personal health problems, the physician-patient relationship is even more important.

The local health officer enjoys a greater degree of local autonomy than any other public official. To consider him the representative of federal bureaucracy suggests ignorance of the Constitution of the United States with the sovereign power delegated to the states. The U. S. Public Health Service has no authority in any state except when interstate or international quarantine is involved. It does administer federal funds granted to state health departments which are allotted by formula, but in turn their final administration is delegated to the state health officer. It is a tradition almost as old as the Public Health Service that its assistance is given a state only upon the request of the state health officer. No agency of federal government has been more meticulous over the years in upholding local autonomy than the U. S. Public Health Service through its Bureau of State Services. In fact, the record shows that the policies of the Public Health Service are largely dictated by the Surgeon General's several advisory councils and by the Association of State and Territorial Health Officers. This pattern has been repeated in most state health departments so that the local health officer may do as well or as poorly as he and the community wish, providing he enforces state and local health laws.

It would seem therefore that public health should be the social arm of medicine, keeping its finger on the pulse of the body politic, while the practising physician keeps his finger on the pulse of the individual patient. There are often great differences between the two.

It would seem that medicine should be the action arm of public health. The private practitioners of medicine are a prime essential to public health and social betterment. There is only one crew to man the ship of medical care, however that medical care may be rendered, the practising physicians of

the nation. We cannot dispense with them. It would be most unwise to handicap them with intolerable restrictions.

THE PART OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

The American Public Health Association is dedicated to the objective study of the health needs of the people of this and other nations. It is obligated through its own professional ethics to continue such studies and to recommend community action when needed. We welcome and anticipate with confidence the wholehearted collaboration of the medical profession.

In our experience, most problems in this field are multilateral. They cannot be solved by unilateral action. Their many facets must be studied, fact sorted from opinion, all sides heard, with the understanding that those who seek the privilege of a hearing must assume the obligation of listening.

The history of our organization shows that we have had great success when men of good will, dedicated to a worthy cause, assemble to discuss, examine and analyze. I speak from personal experience when I say how gratifying it has been to witness the earnestness, objectivity, and generosity with which groups assembled on committees of the American Public Health Association will eventually, if given enough time, synthesize an expression of common agreement. That agreement then becomes a new standard or a new goal.

Our first responsibility, as with medicine, is the commonweal, benefiting the people, discerning their needs and supplying them. It transcends our own individual and collective needs.

By making greater use of its social arm, the public health profession, the medical profession will find a strong ally whenever it becomes necessary to disseminate health education and to guide public opinion.

Let me close this discussion by quoting from an editorial in a recent issue of the *New England Journal of Medicine:*

> The character of medical practice is progressing, and its practitioners must progress with it. There will always be illness to be treated, lives to be ushered into the world and departures to be eased, but the first function of the physician should become the prevention of disease or its recognition in its earliest stages, and the maintenance of health.
>
> When the private practitioner and the public health officer can see their duties as mutually interdependent parts of the general plan to benefit the health and happiness of all mankind, then another step will have been taken in the direction of an attainable millennium.[3]

CONCLUSION

To be specific in conclusion, I would suggest a continuing liaison committee jointly appointed by the American Medical Association and the American Public Health Association. To this Committee all matters should be referred for recommendation which have to do with relationships between the practice of medicine and the practice of public health. It should serve as an advisory group to each organization, keeping each informed of the findings and viewpoints of the other. It would supplement and intensify the work of the existing Inter-Association Committee on Health.

In each state medical society not already so equipped I suggest a standing committee on public health which will become a medical advisory committee to the state board of health and the state health officer, which will take enough time to become fully cognizant of the public health needs of the state, and which will on the one side guide the board in policy making and on the other side interpret to the physicians of the state the objectives and reasons for the public health program.

In each county medical society, I suggest a similar public health committee which will function in the same manner locally as does the state society's public health committee.

Finally, I suggest that the physician members of the American Medical Association who are devoting their careers to the specialty of public health, be given a more comfortable and more inspiring scientific home within the present structure of the American Medical Association than is now offered in the section on Preventive and Industrial Medicine and Public Health, and that each state medical society make similar provision for a public health section which will be attended regularly and vigorously by the health officers and other physicians who specialize in public health.

What I have had to say is largely for domestic consumption. Nevertheless, it has wider implications. With the State Department, Defense Department, Pan-American Sanitary Bureau, and the Institute of Inter-American Affairs all calling on the Public Health Service for skilled personnel to serve in foreign countries, our shortage of trained people in this country is more acute than ever. This means fewer and sometimes less experienced health officers left in charge. More than ever they need the support of the medical profession which can do so much to stabilize their positions and help them gain real status in their communities.

Our public health personnel and skills are in great demand in other nations and are working miracles of the most spectacular nature. We are committed as a nation to meet these demands. Our public health advancement must therefore be preserved.

The prevention of illness, injury and premature death, and the attainment of optimum health is a universal goal sought by all mankind. It appeals equally to the princes and paupers of every land. So desirable is this goal that its pursuit provides an international bond which overcomes vast differences in language and ideology. The American Public Health Association rededicates itself to hasten the day throughout the world when "there shall be no unnecessary suffering and no premature deaths; when the welfare of the people shall be our highest concern; when humanity and mercy shall replace greed and selfishness." It pledges itself to continued careful nurture of the tree of life and health, and prays for the day when "the leaves of the tree" may be used "for the healing of nations."

REFERENCES

1. Cline, John W., President, American Medical Association. Address to California Medical Association, House of Delegates, May 15, 1951, *California Med.* 75, 2:143–144 (Aug.), 1951.
2. The Local Health Department—Services and Responsibilities. An Official Statement of the American Public Health Association, Adopted November 1, 1950. *A.J.P.H.* 41, 3:302–307 (Mar.), 1951.
3. Rendezvous with Health. *New England J. Med.* 245, 4:157 (July 26), 1951.

Studies of Coxsackie Viruses: Observations on Epidemiological Aspects of Group A Viruses*

ROGER M. COLE, PH.D., M.D., JOSEPH A. BELL, M.D., DR.P.H., F.A.P.H.A., EDWARD A. BEEMAN, M.D., AND ROBERT J. HUEBNER, M.D.

Senior Assistant Surgeon; Medical Director and Chief, Section on Epidemiology; Senior Assistant Surgeon; and Senior Surgeon and Chief, Section on Viral and Rickettsial Diseases, Laboratory of Infectious Diseases, National Microbiological Institute, Public Health Service, Bethesda, Md.

SINCE the discovery by Dalldorf and Sickles [1] of the first members of a new group of viruses (now called Coxsackie or C-viruses), numerous reports of their isolation have appeared. Most of these deal with the sporadic recovery of these organisms from the feces of ill persons; occasional isolations from throat washings,[2-6] sewage,[7, 8] flies,[7] and other materials,[2] have been reported. The approximate size, and the physical and chemical properties of the viruses have been described [9-13]; and the production of differing lesions in the suckling mouse has allowed separation of the viruses into two principal groups, A and B.[10] Immunologic types, chiefly within Group A, have been differentiated by means of neutralization and complement-fixation tests [11, 14-24]; hemagglutination has not been demonstrated with the two types tested.[15] Some strains have been adapted to tissue culture [25] or to chick embryos.[26]

Despite considerable information of a laboratory nature, studies of the distribution of C-viruses have been limited in scope: most efforts have been directed toward retrospective isolation of virus from stored fecal specimens from poliomyelitis epidemics, or from cases of poliomyelitis-like or obscure summer diseases. No controlled studies which included long-term observation or large-scale testing of normal persons have been reported. The present study, parts of which have been reported previously,[5, 6] involved the nearly constant surveillance of a small Maryland community over a 14 month period, together with periodic routine fecal testing of all inhabitants and interim testing of ill persons and their families. In addition, fecal and other specimens from a variety of sources and illnesses (described herein) have been tested. The results of testing these various specimens for the presence of Group A Coxsackie viruses (we have never isolated Group B viruses) are given in this report. The first section will deal with the distribution of Group A viruses in relation to various attributes such as sex or age of persons tested, season of the year, and association with illness. The second section will present some epidemiological

* Presented in a condensed form, before the Epidemiology Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

observations on herpangina, an illness which appears to be a specific disease entity caused by Group A viruses.[6]

SOURCES OF SPECIMENS TESTED

The information upon which this paper is based is the result of testing materials (usually fecal specimens; occasionally throat and rectal swabs; rarely blood clots, urines, spinal fluids or autopsy specimens) for the presence of Group A Coxsackie viruses, over a span of 14 months—from August 25, 1949, through October 31, 1950. Fecal specimens, from which most of the tabulations are derived, were collected as follows: from periodic household surveys in two suburban communities, 1,789 specimens (Parkwood, Md.—1,466, Woodmont, Va.—323); and from a sampling of a variety of diseases, 842 specimens (private patients in the D. C. area—304, Children's Hospital, Washington, D. C.—277, Gallinger Hospital, Washington, D. C.—206, Walter Reed General Hospital, Washington, D. C.—26, U. S. Naval Hospital, Portsmouth, Va.—9, State Health Department, Iowa—20). Thirty-nine stools were collected from well individuals at the National Institutes of Health, and 27 autopsy specimens were received from St. Elizabeths Hospital, Washington, D. C.* Throat and rectal swabs were taken chiefly from persons with herpangina, from whom fecal specimens were also collected.

Methods of handling specimens after collection and subsequent procedures for virus isolation are described in a separate paper.[27]

DISTRIBUTION OF GROUP A COXSACKIE VIRUSES

During the 14 month period of study, a total of 2,670 fecal specimens from all sources were tested for the presence of Group A Coxsackie viruses; 148 (5.5 per cent) of these were positive for a single virus each, and one was positive for two different virus types.[49] In addition, 68 throat swabs and 33 rectal swabs were tested: 24 (35.3 per cent) and 13 (39.4 per cent) of these, respectively, were positive. (The high percentage of positives in these latter is due to the origin of most of them from herpangina patients.) Of the 24 positive throat swabs, 22 were from persons also positive by feces; 2 were from persons not tested by feces. All 13 positive rectal swabs were obtained from persons who were positive by feces. In a number of persons with positive feces, however, both throat swabs and rectal swabs were negative: the explanations are probably the failure to take throat swabs early enough in herpangina, the taking of occasional throat swabs from persons without herpangina, and the likelihood that noninfective doses had been obtained from rectal swabs of persons whose feces contained barely threshold-infective doses of virus.

Seven immunologic types of Group A viruses were isolated from all these specimens; these data are summarized in Table 1. Other specimens tested (discussed herein) were entirely negative.

The 2,670 stool specimens were derived from 1,232 persons who were tested (by stools) once or more in the 14 month period; 99 of these were positive once or more for Group A viruses. Actually, since 5 persons were positive twice (once in each year) for different virus types and 2 additional persons were tested and positive by throat swabs only, the total number of positive persons for all types and specimens is 106 (Table 2). Most of the subsequent statistical calculations are based on the 1,232 total of persons and on 99 positive

* Although limitations of space prevent our listing numerous acknowledgments individually, we should like to express, collectively, our appreciation to the many persons, both lay and professional, who aided this investigation. We are especially indebted to Public Health Service nurses Erma Parr Powell and Ruth Emily Anderson, who performed most of the extensive field work during community surveys.

TABLE 1

Total Isolations of Group A Coxsackie Viruses, by Type and Specimen Tested

(8/25/49—10/31/50)

Specimen	Number Tested	Immunologic Type of Virus: 2 [1]	H–3	H–2	H–1	1 [2]	H–4	High Point [3]	Total
Feces	2,670	44	37	23 †	22 †	12	8	3	149
Throat swab	68	1 *	5	6	6	0	3	3	24
Rectal swab	33	0	2	5	4	0	2	0	13
Total	2,771	45	44	34	32	12	13	6	186

[1] Type 2 is Dalldorf's original Type 2 (prototype, strain Fleetwood), sometimes also called Albany II.
[2] Type 1 is Dalldorf's original Type 1 (prototype, strain T.T.), sometimes also called Albany I.
[3] High Point and other North Carolina strains now appear to be the same as Texas strains (except Texas BJ), and as Howitt's Type 4.
* This specimen was, precisely, a sputum.
† One stool specimen was positive for both Types H-1 and H-2.

persons obtained by testing of feces. In one instance, that of virus distribution by season, it has been necessary, in order to show the seasonal distribution, to incorporate the same persons into the figures more than once (since many persons were tested repeatedly in different months during surveys). Calculations for seasonal distribution are based, therefore, on *person-month tests* (i.e., one person tested once or more, by feces, in a given month, was counted once).

It is realized that the persons tested were not selected entirely at random, and that there are in consequence some unresolved variables in the following results. It seems worthwhile, however, to present the over-all results as we have found them, with statistical calculations based thereon, in the full realization of probable discrepancies but in the hope of stimulating other attempts at controlled studies of the distribution of Coxsackie viruses.

TABLE 2

Total Persons Positive for Group A Coxsackie Viruses by Type and Year of Testing. Results of Testing All Types of Specimens

(8/25/49—10/31/50)

Virus Type *	1949	1950	Total
H–3	0	26 [1, 2]	26
H–2	1	21 [1]	22
2	20	2	22
H–1	3	16	19
1	8	0	8
H–4	0	6	6
High Point	0	3	3
Total	32	74	106

* All viruses belong to Group A. Immunologic type was determined by neutralization and complement-fixation with specific mouse antisera: see separate paper [27] for details.
[1] Includes one person positive by throat swab only; all others are results of testing feces.
[2] Includes five persons positive in 1949 for Type 2.

In Nature—The isolations from feces, throat swabs, and rectal swabs, shown in Table 1, represent our experience with the distribution of Group A Coxsackie viruses in nature. Other workers have reported isolations from blood and serum [2] (in addition to those from feces and throat washings); from central nervous system tissues at autopsy [2]; from flies [7]; and from sewage.[7, 8] We have not been able to isolate virus from nine acute-phase bloods from patients with herpangina and from whom virus was isolated from feces or throat swabs; nor from 19 acute-phase bloods, 16 spinal fluids, and 7 urines; nor from 27 autopsy specimens (brain, liver, kidney) taken from patients with miscellaneous illnesses. The reported isolations of Coxsackie viruses from similar materials may reasonably be doubted, since all were made in a single laboratory and their validity was questioned, at least

in part, by the author.[2] Isolations from blood, spinal fluid, and tissues have not been successful in another laboratory.[46] Evidence presented in a separate paper[27] shows that spontaneous infection from mouse to mouse is unlikely and suggests that the isolations from blood and tissues mentioned in the foregoing[2] were due to laboratory sources of contamination rather than to accidental dissemination of virus.

The persistence of C-viruses of Group A in the host is variable. The longest time, in our experience, over which a person maintained virus of a single type in the feces was 76 days. Since this individual had virus when first tested and was not tested after the 76th day (having moved out of the study area), it is possible that virus persisted longer. Also, since testing was somewhat irregular at that time, having been done at intervals of one or two months, the possibility that virus was lost, and then regained in the interim, exists. In other positive persons, virus of the same type could be recovered up to 47 days but in most instances had disappeared when subsequent stool specimens were tested about a month after the initial isolation. Serial throat swabs have not been tested; those that have been positive were taken during the acute stage of herpangina.

Despite repeated testing of many individuals, there has been no evidence, during the period of this study, of reinfection of any individual with a single type of C-virus. From five persons in Parkwood, however, two different virus types (within Group A) were recovered in successive years at the same season; all five harbored Type 2 in 1949 and Type H-3 in 1950. Two of these had clinical herpangina in each year, two had herpangina in 1949 only, and one was a family contact in both years.

The coexistence of different immunologic types of Group A C-viruses in an individual and within a family has also been noted. In 1950, a patient with herpangina was shown to harbor simultaneously, in an acute-phase stool, both Types H-1 and H-2[49]; and of two siblings in another family, each ill with herpangina within a week's time, one harbored Type H-1 and the other harbored H-4.

Geographical—Coxsackie viruses (all groups) have been reported from 17 states, Canada,[29, 30] England,[31] Denmark,[32] Israel,[34] and France.[33] All of our isolations except one (all Group A viruses) were from persons residing in the metropolitan area about Washington, D. C.; the exception was from Portsmouth, Va. The sources of specimens tested have been given in the foregoing. Locally, the distribution of virus appears to depend on contact with infected individuals. Thus, in that portion of our study which was most complete, virus isolations can be seen to be most abundant within a certain radius of the first infected person (Figures 1 and 2). It is known, in these examples, that there was close personal contact among children of most families from which virus was subsequently isolated.

By Sex—The sex distribution of persons tested for Coxsackie viruses has rarely been given in the literature, and when stated, as occasionally for a few cases of illness, is of little comparative value because of the small numbers. Dalldorf, however, has stated that sex distribution of 433 to 517 persons tested by him was equal, but of persons positive for virus, males predominated in a ratio of 2 to 1.[9, 47] In our experience with 1,094 tested persons whose sex and age were known, the distribution of virus by sex was within the limits of chance variation (Table 3, line A.). Adjustment for age does not alter this significantly.

By Race—The racial distribution of persons tested or positive for C-viruses is not mentioned in the literature. The difference in distribution of viruses (between whites and Negroes) in our

FIGURE 1

PARKWOOD STOOL SURVEY RESULTS, SEPTEMBER, 1949

3,4
5,7
5,8
FAMILIES (=HOUSEHOLDS)
□ TESTED* = 80
□ NOT TESTED = 8
PERSONS
TOTAL NUMBER TESTED = 296
○ HERPANGINA CASE = 8
△ POSITIVE, TYPE 1 = 7
▲ POSITIVE, TYPE 2 = 16
× POSITIVE, TYPE H-2 = 1
Numbers on map indicate sequence of occurrence of herpangina cases
* One or more persons tested per family

series, utilizing crude figures, is not of statistical significance (Table 3, line B.). If only the 1,098 persons for which both race and age were known are included, the significance becomes less ($p = 0.104$). Approximately, only one-fourth of the colored persons tested, and one-twentieth of those positive, were over the age of 10 years; adjustment by age, utilizing these figures, indicates that the distribution of virus by race could readily have occurred by chance, since this distribution could occur 65 times in each 100 trials by chance alone ($p = 0.650$).

The somewhat higher percentage of positive persons in the Negro group is probably due, also, to a sampling defect. The number of Negroes tested was less than one-fourth the number of whites; these were derived entirely from two hospital sources (Gallinger and Children's) which have a large Negro patient population; and most of the colored positives (17 out of 26) were herpangina cases or family contacts.

By Age—Information on the ages of persons tested for C-viruses is difficult to obtain from the literature. The best breakdown that deals with any numbers is that of Dalldorf,[47] who grouped 517 persons tested by age. More sparse

FIGURE 2

PARKWOOD STOOL SURVEY RESULTS, AUGUST, 1950

FAMILIES (= HOUSEHOLDS)
□ TESTED* = 83
□ NOT TESTED = 21
PERSONS
TOTAL NUMBER TESTED = 285
○ HERPANGINA CASE = 6
▲ POSITIVE, TYPE H-3 = 18
Numbers on map indicate sequence of occurrence of herpangina cases
2 Cases (no. 4), occurred on same day
* One or more persons tested per family

information, obtained from other sources [2-4, 7, 35] that cite age, has been added to Dalldorf's figures, and the results have been compared with those in our own series (Table 4). The selected nature of cases reported in the literature results, in such a compilation, in certain discrepancies; the higher percentage of positive persons over 10 years of age in cases from the literature, for example, is probably the result of including six positive adults who were laboratory infections [35] and five questionable positives above this age from a series of autopsies.[2]

It is evident from Table 3, line C., that Coxsackie viruses, Group A, were in our experience isolated from persons under the ages of 9 years and of 4 years a significantly greater number of times than from older persons; this is also true if the calculation is based on totals of our results together with the results from the literature given in Table 4.

By Exposure—With the exception of previous reports from this laboratory,[5, 6] the results of which are incorporated into the total figures of the present paper, there is no information in the literature concerning the relation of person-to-person exposure to the presence in the feces of Coxsackie viruses.

TABLE 3

Distribution of Group A Coxsackie Viruses, by Various Attributes, Among Persons Tested Once or More by Feces

(8/25/49—10/31/50)

Attribute		*Number Tested*	*Number Positive*	*Per cent Positive*			*"p" **
Total [1]		1,232	99	8.0			—
A. *Sex:*	Male	608	45	7.4			
	Female	486	50	10.3			0.092
B. *Race:*	White	938	72	7.7			
	Negro	224	26	11.6			0.056
C. *Age:*	0– 4 yrs.	332	56	16.9	12.7	16.9	
	5– 9 yrs.	245	17	6.9			
	10–19 yrs.	115	6	5.2	4.3	5.1	0.000
	20 and over	402	16	4.0			
D. *Exposure:*	Yes	103	36	35.0			
	No	1,129	63	5.6			0.000
E. *Season:*[2]	Aug.-Sept.	970	95	9.8			
	All other months	1,511	28	1.9			0.000

[1] Each pair of attributes may not total 1,232 because of omission of unknowns in each category.
[2] By person-month tests (One person tested once or more in a given month).
* "p" equals the probability of occurrence of this distribution by chance variation.

TABLE 4

Age Groups of Persons Tested for Coxsackie Viruses

	From Literature *			*From Present Study*		
Age Group	*Number Tested*	*Number Positive*		*Number Tested*	*Number Positive*	
0– 4 yrs.	125	10	(10.8%)	332	56	(12.7%)
5– 9 yrs.	161	21		245	17	
10–19 yrs.	160	13	(9.3%)	115	6	(4.3%)
20 and over	108	12		402	16	
Total	554	56	(10.8%)	1,094	95	(8.7%)

* Compiled from References 2, 3, 4, 7, 10, 47.

Early reports of herpangina [36-38] included a number of familial cases, although data on virus isolations, of course, are lacking. Our experience as herein reported indicates a significantly higher percentage of positive persons among those exposed within the household to a person previously positive for virus, as opposed to the percentage of positives among those persons not so exposed (Table 3, line D.); statistical significance remains after adjustment for age. In addition to these family contacts and secondary cases of herpangina, 9 out of 19 (47.4 per cent) neighborhood contacts (i.e., persons residing in the close vicinity of, or who were in daily contact with, or whose children habitually played with known cases of herpangina or contacts positive for virus) were

positive for C-virus of the same immunologic type. Furthermore, of 43 families with one person positive for virus in which one or more other persons were tested within 5 days, 22 families contained one or more other persons positive for virus; in all but one of these, the virus recovered from the secondary positives was of the same immunologic type as that recovered from the initial positive in the family. These facts indicate the familial occurrence of Group A viruses, and together with observations on the gradual spread of herpangina among playmates in Parkwood,[5, 6] suggest strongly that these viruses are spread directly from person to person.

By Season—Most previous reports of Coxsackie virus isolations indicate recovery of the organism during late summer and early fall months; testing, however, has been restricted to specimens obtained during this season. Testing in the series here reported (based on person-month tests) is more complete but is still somewhat deficient in certain winter and spring months. Thus, from January through May, 1950, only 130 person-month tests were performed, as compared with an average of 1,306 such tests performed during any other five month period. Nevertheless, in two routine survey areas where viruses were recovered later, no viruses were found in June—suggesting that these organisms do not appear until later in the summer in these areas. Utilizing the available data, a significant preponderance of C-viruses of Group A can be shown during August and September as compared with other seasons (Table 3, line E).

The greatest number of isolations varied slightly by month from year to year; thus in 1949, September and October were the favored months, and in 1950 most positives occurred during August and September. (Since sampling began late in August in 1949, however, it is impossible to state whether a high percentage of positives would have occurred in earlier August of that year.) These peaks of virus isolation correspond roughly to the outbreaks of herpangina observed in each of these years, and both Zahorsky[36] and Breese[38] have pointed out that the peak of occurrence of this disease, as seen clinically, may occur in different summer or fall months in different years.

By Relation to Illness—That Coxsackie viruses may, as a result of laboratory infection, cause minor illnesses that resemble pleurodynia, myalgia, or "summer grippe" has been shown[31, 35, 45, 46]; the role of the viruses in the natural causation of illness, however, needs clarification. A glance at Table 5 will indicate the groups and types of these viruses which have been reported from such diverse syndromes as poliomyelitis, both paralytic and nonparalytic[1, 7, 19, 20, 28-30, 37, 39, 41, 42]; poliomyelitis-like syndromes,[2, 41] including "summer grippe"[43]; myalgia, pleurodynia or Bornholm disease[4, 31, 35]; aseptic meningitis[7, 40]; "influenza-like" illnesses[2, 45]; fevers of unknown origin[2, 3, 40]; herpangina[5, 6]; and from persons not ill.[5, 6] The total number of persons positive for these viruses is not large—less than 200 as reported in the literature, exclusive of herpangina. The viruses isolated represent a number of strains and immunologic types, not all of which can yet be stated to be distinct from one another; many can be placed, from their pathological effects in suckling mice, into either Group A or Group B, but a few strains such as Texas BJ[24] and Powers and Matulaitis[39, 44] apparently have not yet been assigned to groups.

An important deficiency in most of the work cited above has been the failure to examine simultaneously groups of normal persons or of persons with illnesses other than the one being studied. The effect is therefore one of restriction to a limited group, and conclusions on virus distribution and relation to illness

TABLE 5

Coxsackie Virus Isolations, by Group and Type, as Reported in the Literature from Various Illnesses

Clinical Picture	*Virus types within: Group A*	*Group B*	*Group ?*
Poliomyelitis or polio-like picture	*1*,[20, 41] *2*,[2, 41] *3*,[2] *4* *[2, 24]	*Conn.* 5,[40] *Ohio* [43]	*Texas B J*,[24] *?* [29, 30] *Powers and Matulaitis*,[39]
Pleurodynia or myalgia	*2* [31]	*Conn.* 5,[35] *DeMole & Kine* [4]	—
Summer grippe	—	*Ohio* [43] *Conn.* 5,[35]	—
Three-day fever	*2* [3]	—	—
"Flu-like"	*4, 5* [2]	*Conn.* 5,[45]	—
Miscellaneous autopsies	*2, 4, 5* [2]	—	—
Aseptic meningitis	—	*Conn.* 5,[40]	—
Fever of unknown origin	—	*Conn.* 5,[40]	—
Herpangina	*2, H–1, H–2, H–3, H–4,* High Point * [5, 6]	—	—
Not ill	*1, 2, H–1, H–2, H–3, H–4,* High Point [5, 6]	—	—

* Type 4 of Howitt [2] is now considered by Dalldorf (personal communication) to be the same as the Texas strains (Dallas MB, Bonham NV, Texas 1–2) and the North Carolina strains (High Point, etc.).

(Raised figures refer to References at the end of this paper.)

based thereon are uncontrolled, hence of little value. To avoid such difficulty, we have examined stool specimens from a variety of ill and well persons in several seasons over a period of 14 months. The results (summarized in Table 6, line A.) show a marked preponderance of Group A Coxsackie viruses in cases or contacts of herpangina, as opposed to isolations from other groups. This distribution among the populations studied could not have occurred by chance (Table 6, line B.); this is true whether herpangina cases and contacts are compared with all other persons tested (as shown), or only with those having other illnesses. The evidence suggests that Group A Coxsackie viruses are the etiologic agents of the summer disease of children clinically recognizable as herpangina, and that scattered small numbers of isolations from other varied sources must be considered fortuitous and probably related only to the seasonal prevalence of the viruses until otherwise established.

Despite the lack of valid evidence that Group A Coxsackie viruses are etiologically related to any disease except herpangina, the literature is replete with assumptions on their role, as well as that of viruses of Group B, in other illnesses. Their possible relations to poliomyelitis especially have been greatly overemphasized. Present evidence does not warrant the inference that C-viruses may act synergistically or in a predisposing manner to convert nonparalytic into paralytic cases of poliomyelitis; neither does it suggest that such viruses are present, in cases of poliomyelitis, more often than might be accounted for by coincidence.[12, 20] A careful gleaning of the literature reveals, so far as could be ascertained, 531 cases of poliomyelitis which could be separately enumerated and from which feces had been tested for Coxsackie viruses of all groups. These cases, divided into paralytic, nonparalytic, and paralysis unspecified, are presented in Table 7, line A. The literature does not state exactly how many of each group were tested for poliomyelitis virus,

TABLE 6

Relation of Illness and Group A Coxsackie Virus Isolation in Persons Tested Once or More by Feces

(8/25/49—10/31/50)

A.	*Number Tested*	*Number Positive*	*Per cent Positive*
Herpangina: cases	45	41	91.1
Herpangina: family contacts	44	17	38.7
Not ill: all surveys	718	31	4.3
Ill: not herpangina *	425	10	2.4
	1,232	99	8.0

* Includes poliomyelitis (170 cases), diarrheas in children (51), mumps (24), lymphocytic meningitis (17), measles (16), hernia (7), varicella (6), diagnosis unknown (33), and miscellaneous (67 cases).

Miscellaneous group includes 3 cases or less (usually 1 or 2), each, of: abdominal injury; appendicitis, acute; arthritis, acute; tracheobronchitis; cervical adenitis; diagnostic study; fever of unknown origin; hydrocephalus; infected knee; infection unspecified; inguinal adenitis; kerosene ingestion; lye ingestion; intestinal obstruction; petroleum intoxication; ischiorectal abcess; leukemia; cerebral neoplasm; otitis; pertussis; pharyngitis; splenomegaly and anemia; syphilis; tuberculosis; typhoid; intra-ocular hemorrhage; sickle-cell anemia; anemia, unspecified; asthma; pneumonia; bronchitis; cellulitis; cretinism; glomerulonephritis; lime ingestion; phimosis; pyloric stenosis; and reaction to diphtheria injection

B.	*Number Tested*	*Number Positive*	*Per cent Positive*	*"p"* †
Herpangina: cases and family contacts	89	58	65.2	0.000
Not herpangina cases or contacts	1,143	41	3.5	—

† "p" equals the probability of occurrence of this distribution by chance.

although the few that were stated to be positive for this virus are so listed. It is apparent from this table that nearly equal percentages of paralytic and non-paralytic cases harbored C-viruses; this does not support the assumption that presence of C-viruses tends to cause a case of poliomyelitis to become paralytic. Indeed, in the absence of more laboratory information, including poliomyelitis virus isolations, one cannot safely assume that the majority of the cases tested were truly poliomyelitis cases.

During an entire summer and fall season (1950), we did not recover C-viruses from a single one of 170 cases of clinically diagnosed poliomyelitis cases in Washington, D. C. If these 170 cases are added to the 531 reported in the literature and the total is opposed to the 1,062 persons (tested by us) who were not poliomyelitis cases, a Chi-square test (Table 7, line B.) demonstrates a nearly random distribution of Coxsackie viruses between persons with poliomyelitis and all other persons without poliomyelitis. Non-poliomyelitis cases in the literature, though not included, would only emphasize the presence of Coxsackie virus in persons without poliomyelitis and would not invalidate the above results. There thus seems to be no evidence in the published literature to date to support the idea that Coxsackie viruses occur more frequently in persons with poliomyelitis than could be anticipated by coincidence.

The reasons for the assumed relationship of poliomyelitis and Coxsackie

TABLE 7

A. Tests of Poliomyelitis Cases for Coxsackie Viruses (All Groups), as Reported in the Literature

Type of Case	Number Tested for C-viruses	Number Positive	Number Tested for Polio Virus	Number Positive
Nonparalytic	288	30 (10.4%)	Not stated	4
Paralytic	139	14 (10.1%)	Not stated	4
Paralysis unspecified	104	28 (26.9%)	Not stated	18
	531	72 (13.6%)		26

B. Relation of Poliomyelitis Cases and Coxsackie Virus Isolation, Compiled from Results Reported in the Literature Together with Results of the Present Study

	Number Tested	Number Positive	Per cent Positive	"p" *
Poliomyelitis cases	701	72	10.3	0.470
Not poliomyelitis cases	1,062	98	9.2	—
	1,763	170	9.6	—

* "p" equals the probability of occurrence of this distribution by chance.

viruses are readily apparent. Dalldorf's original isolations [1, 41] from patients with paralysis (from whom poliomyelitis virus also was later isolated [48]) stimulated search for the viruses in specimens from polio patients, from patients with poliomyelitis-like or other vague summer diseases, and from sewage and flies at times and in places where poliomyelitis was prevalent. Testing of specimens has been almost completely restricted to such times and sources. Subsequent elucidation of somewhat similar ecologic, biologic, and physical properties of Coxsackie and poliomyelitis viruses [9, 13] further enhanced suppositions that the viruses might cause the same or indistinguishable illnesses. Since the seasonal distribution of these viruses has been shown to be similar, and many persons who were not ill or who were ill with known diseases other than poliomyelitis have been shown to harbor C-viruses, it is obvious that common seasonal and familial distribution would account for the sporadic isolation of Coxsackie viruses from patients with poliomyelitis—particularly when testing has been largely restricted to such patients.

HERPANGINA

Herpangina, a specific febrile disease of children, has been previously described.[6, 36-38] The febrile disease of children observed by us in 1949 [5] appears in retrospect to have been herpangina also; clinical observations of typical throat lesions were made in five of nine patients but were not mentioned in writing the paper because of our unfamiliarity with the clinical syndrome at that time. These nine cases (eight from Parkwood, Md., and one from a nearby area) observed in 1949 are included in the totals of herpangina cases described in the present paper.

The total number of herpangina cases observed by us over a span of 14 months was 50; Group A Coxsackie viruses were isolated from 45 of these during the acute stage of illness. If a person who was a case or a family contact once or more during the entire period is listed only once, the distribution by source is

shown in Table 8 (this table does not list persons tested by throat swabs only).

EPIDEMIOLOGIC FEATURES *

Occurrence—That herpangina occurs as an epidemic disease, in outbreaks of varying size, has been the experience of all previous investigators. Our experience confirms this: we noted separate small outbreaks in two successive years in the same community, as well as portions of what was apparently a widespread epidemic in the metropolitan area of Washington, D. C., in one year. Conversations with practising physicians in several cities strengthen our suspicion that herpangina is a widespread disease of children which occurs epidemically in many, if not all, years.

Our experience in one small community (Parkwood, Md.) under nearly constant study will point out some of the aspects of the occurrence of herpangina. The first outbreak observed by us of a disease now recognized as herpangina took place here in late August and early September of 1949. Eight cases appeared in five closely associated households; all were shown to harbor Group A Coxsackie virus, Type 2, and none contained poliomyelitis virus in the feces.[5] In the subsequent routine stool survey of the community later in September, 296 persons from 80 families (or households) were tested; 24 persons, including the 8 who were previously herpangina cases, were found to be positive for Group A viruses of three immunologic types (Figure 1). In December of the same year, a sample—random except for previous positives—composed of 176 persons in 40 households was tested by stools; only one person, a previous positive, was found to harbor virus, and this was of the same type as that isolated originally from the same individual.

From January through May, 1950, no stools from Parkwood were tested and no illnesses of an unusual nature were recorded. In June, 1950, another routine stool survey was undertaken; 284 persons in 80-odd households were tested and no Coxsackie viruses were found. In late July and early August a second outbreak of 6 herpangina cases (in much the same area and involving 2 of the same children as in 1949) occurred; all of these persons were positive

* See Table 10.

TABLE 8

Herpangina: Persons Tested Once or More by Feces in a 14 Month Period, Who Were Cases or Family Contacts of Herpangina Once or More—Distribution by Source and by Group A Coxsackie Virus Isolation

Source	Cases		Family Contacts		Total	
	Number Tested	Number Positive	Number Tested	Number Positive	Number Tested	Number Positive
Children's Hospital	21	18	9	6	30	24
Washington, D. C., area	10	9	17	5	27	14
Parkwood, Md.*	12	12	16	6	28	18
Woodmont, Va.	2	2	2	0	4	2
Totals	45	41	44	17	89	58

* In Parkwood, there were eight cases in 1949; in 1950, two of the same persons were again cases, and four other cases occurred in different persons. Thus, the number of persons who were cases *once or more* over the entire study period was 12.

In addition to the above, two cases positive twice in successive years and three cases in 1950 were tested by throat swabs only; two of these were positive. Total herpangina cases tested once or more *by any specimen*, therefore, is 50, and total positive are 45.

for Group A Coxsackie virus type, Type H-3.[6] In a routine stool survey in August, 285 persons in 83 households (including all herpangina cases and their families) were tested. Eighteen persons harbored Group A Coxsackie virus, Type H-3 (Figure 2); no other virus type was isolated. Six of these positive persons were the previous herpangina cases; 3 were family contacts of herpangina, and 9 were persons with exposure to cases or other positives but without a recent history (either before or after virus isolations) of any illness resembling herpangina. Some of the features of herpangina illustrated by these observations and shown in Figures 1 and 2 are discussed herein.

Familial Incidence—Familial occurrence of herpangina has been noted before.[36, 38] Figures 1 and 2 demonstrate that, of 14 cases in Parkwood, 10 occurred in pairs—one pair to each of five families. In addition, 7 family pairs of herpangina cases were observed in areas outside of Parkwood.

Season—All cases in our series occurred in late summer and early fall months (Table 9, line B.); this general seasonal distribution has been observed by previous workers also and coincides with the seasonal prevalence, previously discussed, of Group A viruses. No case of illness that could be clinically classified as herpangina has been seen in other seasons, despite nearly constant observation of illnesses in our study areas and the alerting of local physicians for reporting of suspicious cases.

Age—Herpangina is predominantly a disease of children, although the age range may vary, from one epidemic to another, between several months and more than 60 years.[36-38] The majority of our cases were in children under the age of 4 years (Table 9, line C.); two were in fathers of children also ill with herpangina.

Race and Sex—Previous authors, with one exception, have not mentioned race; and none has given the sex distribution of cases observed. Levine, *et al.*,[37] mentioned that three cases of the disease observed by them (and now considered by us to have been herpangina) occurred in adult Negroes. In our experience, herpangina was seen nearly twice as often in white persons as in Negroes (Table 9, line D.), but many more white persons were observed: furthermore, the number of Negro cases represents a percentage of Negroes tested which is twice that of white cases to white persons tested. One cannot definitely state, therefore, that race has any influence on the occurrence of the disease. Neither, apparently, has sex; males and females were nearly equally distributed among our cases (Table 9, line E.).

Mode of Spread—Several factors suggest strongly that herpangina (or actually the viruses responsible) is spread from person to person. These include: the familial occurrence of the disease

TABLE 9

Herpangina: Distribution of 50 Herpangina Cases, 1949 and 1950, by Various Attributes

	1949	*1950*	*Total*
Number of Cases	9	41	50
A. C-virus isolated	9	36	45
B. Occurrence by months:			
July	..*	3	3
August	4	17	21
September	5	19	24
October	0	2	2
C. Age:			
0–4 years	5	29	34
5–9 years	3	10	13
10–19 years	0	1	1
20 and over	1	1	2
D. Race:			
White	0	24	33
Colored	..*	17	17
E. Sex:			
Male	6	18	24
Female	3	23	26

* Not tested.

TABLE 10

Epidemiologic Features of Herpangina as Given by Several Authors

	Zahorsky [36]	Levine, *et al.*[37]	Breese [38]	Present Series
Number of cases	82	106	28	50
Occurrence	Epidemic	Epidemic	Epidemic	Epidemic
Season	Summer, early fall (June–July, 1917; Aug.–Sept., 1920)	July–Aug., 1938	Summer, 1938, 1940	July, Aug., Sept., 1949, 1950
Age	Children, 3–10 years (no distribution given)	Range 7–67 years: 91 of 106 were under 18 years	22 cases under 6 years, median 4 years	Over 50% under 4 years; median 3–4 years
Sex	No distribution given	No distribution given	No distribution given	Equal, males and females
Race	Not mentioned	3 adult cases were Negro	Not mentioned	No apparent influence
Familial cases	Yes: siblings	Not applicable: camp outbreaks	Yes: siblings	Yes: 10 siblings-pairs, 2 parents
Incubation period	4–10 days	Maximum, 5 and 7 days	1–3 days; majority 3 days	3–4 days
Virus isolations	None attempted	Herpes isolation failed in 2 cases	Herpes isolation failed in one attempt	C-viruses from 45/50. Herpes and polio virus isolation failed in 8 cases
Second attacks	None mentioned	None mentioned	None mentioned	Observed twice, with different virus type
Mode of spread	Not mentioned	Not mentioned	Not mentioned	Person to person
Asymptomatic carriers	—	—	—	Shown to occur

and of the viruses; the existence of familial contact carriers of the virus; the significantly greater prevalence of viruses among cases and contacts than among non-contacts; and the nonexplosive, gradual spread of the illness, as observed in Parkwood, among children who were in daily contact. The isolation of viruses from acute-stage throats and from feces over longer periods of time suggests ready sources of contamination. Earlier workers did not specifically suggest person-to-person spread, but inferred such in calculating incubation periods from exposures to known cases.

Incubation Period—The length of the incubation period of herpangina has been previously suggested to vary from 1 to 10 days.[36-38] In the 17 cases in which we could establish familial or other close contact, the intervals between cases ranged from 1 to 9 days; 4 days was the most frequent interval, and the group-calculated median was also 4 days.

Second Attacks—As mentioned previously, herpangina occurred twice in each of two children in successive summers in one community under our observation (Cases 1 and 5, Figure 1, equal Cases 1 and 2, Figure 2, respectively). A different immunologic type of Group A Coxsackie virus was isolated each year. Second attacks of the disease have not been described previously; if, as appears true (see also below), multiple immunologic types of these viruses can cause the disease and immunity is type-specific, repeated attacks in the same individual due to a different type virus each time are possible—and may account for the large yearly numbers of

cases described to us by practising physicians.

Carriers—The existence of asymptomatic carriers of Group A Coxsackie viruses has been mentioned in the first part of this paper; convalescent carriers also occur, since virus has been recovered from stools passed as long as 47 days after herpangina. Evidence that persons asymptomatic at the time of virus isolation were not simply missed cases is available for 28 persons in Parkwood, where complete illness histories were taken. Six of these were not ill at any time before or after virus isolation; none had illnesses resembling herpangina at any time before virus was isolated; and only 7 were ill within 10 days (the probable maximum incubation period) after virus was first isolated. The illnesses of the later 7 were minor respiratory illnesses, mostly afebrile, which did not include the principal clinical features of herpangina. A study now in progress of blood specimens taken at the time of, and several weeks after, virus isolation will be necessary to determine whether the role of virus in a carrier is that of a passive fecal inhabitant or one of an active "infecting" agent in producing atypical or abortive illness.

Etiology—Evidence that cases and contacts of herpangina are significantly associated with the presence of Group A Coxsackie viruses has been presented in Table 6 as well as in a previous paper.[6] The clinical picture of herpangina has been associated with the presence of these viruses in 45 of 50 cases tested by us at the time of illness; type-specific neutralizing antibody rises have been shown in 17 of 21 cases and are tabulated in a separate paper.[27] The viruses found in herpangina cases comprise six of the seven immunologic types which have been isolated by this laboratory (Table 11); no evidence of reinfection with the same virus type has been found by repeated testing over a 14 month period.

TABLE 11

Distribution of Group A Coxsackie Viruses, by Type, Among Herpanginia Cases and Family Contacts

(8/25/49—10/31/50)

Virus Type	*Cases*	*Family Contacts*	*Total*
H-2	12*	4	16
H-3	11	3	14
H-1	9*	5	14
Albany 2	9	4	13
H-4	3	0	3
High Point	1	2	3
	45	18	63

* Includes one person positive simultaneously for both Types H-1 and H-2.

The causation of a single clinical syndrome by multiple immunologic types of an organism is not unusual; it occurs, among others, in pneumococcal pneumonias, scarlet fever, *Hemophilus influenzae* meningitis, poliomyelitis, and influenza. The possibility that Coxsackie viruses, like organisms responsible for some of the foregoing diseases, may also cause atypical illnesses or illnesses which differ in their anatomical classification must, however, be considered. Such a possibility is indeed suggested by most previous investigations. The most interesting and best substantiated of these include laboratory infections [4, 31, 35, 45]; these and others [39, 43] deal chiefly with Group B or ungrouped viruses, with which we have had no experience.

SUMMARY

Over a 14 month period (August 25, 1949, through October 31, 1950), 2,670 fecal specimens, representing 1,232 persons tested once or more, have been tested for the presence of Coxsackie viruses. Smaller numbers of throat swabs, rectal swabs, blood clots, spinal fluids, urines, and autopsy specimens were also tested. Specimens were obtained from persons ill with various diseases, both in and out of hospitals; and from periodic routine stool surveys

of communities in the metropolitan area of Washington, D. C. The results of testing are given below:

1. One hundred and forty-eight fecal specimens, 24 throat swabs, and 13 rectal swabs were positive for Group A Coxsackie viruses of seven different immunologic types. No Group B or ungrouped viruses were isolated. No viruses were isolated from other types of specimens.

2. Ninety-nine persons were positive once or more, by feces; 5 of these persons were positive again in a second year for a different type of virus, and 2 persons were tested and positive by throat swab only—making a grand total of 106 persons positive for Group A Coxsackie viruses of all types and by all specimens tested.

3. Most persons were tested as a result of periodic routine stool surveys: the basis for selection of other persons has been discussed. The total results suggest that sex and race are not significantly associated with the distribution of these viruses, and that

4. Age, exposure, season, and relation to a specific illness are important attributes of Group A Coxsackie virus distribution. Virus occurred, in significantly greater numbers, among:

a. Persons under 9 years of age,

b. Persons exposed in the household to a previous positive person,

c. Persons tested during August and September,

d. Persons who were cases or contacts of herpangina. There is no valid evidence from our work or from the literature that these viruses are significantly associated with poliomyelitis or other diseases.

5. Group A Coxsackie viruses of different immunologic type may occur:

a. Successively, in different years in the same person, and apparently cause herpangina each time;

b. Nearly simultaneously in siblings with herpangina;

c. Simultaneously in a single stool of a child ill with herpangina.

6. Group A Coxsackie viruses may be found in the stools of an individual for as long as 76 days. They usually persist, however, for less than one month.

During the period of this study, many of the epidemiologic features of herpangina have been observed; they include:

(1) Epidemic occurrence in two successive years in a single community

(2) Multiple cases within families

(3) Seasonal occurrence in late summer and early fall months

(4) Predominance in children under 4 years of age

(5) No apparent influence of sex and race

(6) Mode of spread from person to person

(7) Incubation period ranging from 1 to 10 days and most frequently 4 days

(8) Occurrence of contact and convalescent carriers of the causative viruses

(9) Etiology, apparently multiple immunologic types of Group A Coxsackie viruses

REFERENCES

1. Dalldorf, G., and Sickles, G. M. An Unidentified Filtrable Agent Isolated from the Feces of Children with Paralysis. *Science* 108:61–62 (July 16), 1948.
2. Howitt, B. F. Recovery of the Coxsackie Group of Viruses from Human Sources. *Proc. Soc. Exper. Biol. & Med.* 73:443–448 (Mar.), 1950.
3. Webb, C. H., and Wolfe, S. G. "Three-Day Fever"—An Acute Febrile Disease of Childhood (Further Observations), with Virus Laboratory Studies and Isolation of the Coxsackie Virus by Beatrice F. Howitt. *Am. J. Dis. Child.* 80:245–253 (Aug.), 1950.
4. Weller, T. H., Enders, J. F., Buckingham, M., and Finn, J. J., Jr. The Etiology of Epidemic Pleurodynia: A Study of Two Viruses Isolated from a Typical Outbreak. *J. Immunol.* 65:337–346 (Sept.), 1950.
5. Huebner, R. J., Armstrong, C., Beeman, E. A., and Cole, R. M. Studies of Coxsackie Viruses. Preliminary Report on Occurrence of Coxsackie Virus in a Southern Maryland Community. *J.A.M.A.* 144:609–612 (Oct. 21), 1950.
6. Huebner, R. J., Cole, R. M., Beeman, E. A., Bell, J. A., and Peers, J. H. Herpangina—Etiological Studies of a Specific Infectious Disease. *J.A.M.A.* 145:628–633 (Mar. 3), 1951.
7. Melnick, J. L., Shaw, E. W., and Curnen, E. C. A Virus Isolated from Patients Diagnosed as Non-paralytic Poliomyelitis or Aseptic Meningitis. *Proc. Soc. Exper. Biol. & Med.* 71:344–349 (July), 1949.
8. Clark, E. M., Knowles, D. S., Shimada, F. T., Rhodes, A. J., Ritchie, R. C., and Donohue, W. L. Coxsackie Virus in Urban Sewage. Recovery of Virus in Season of Low Incidence of Reported Poliomyelitis. *Canad. J. Pub. Health* 42:103–107 (Mar.), 1951.
9. Quigley, J. J. Ultrafiltration and Ultracentrifugation Studies of Coxsackie Virus. *Proc. Soc. Exper. Biol. & Med.* 72:434–435 (Nov.), 1949.
10. Dalldorf, G. The Coxsackie Viruses. *Bull. New York Acad. Med.* 26:329–335 (May), 1950.
11. Melnick, J. L. Studies on Coxsackie Viruses: Properties, Immunological Aspects, and Distribution in Nature. *Bull. New York Acad. Med.* 26:342–356 (May), 1950.
12. Melnick, J. L. The Poliomyelitis, Encephalomyocarditis, and Coxsackie Groups of Viruses. *Bact. Rev.* 14:233–244 (Sept.), 1950.
13. Himmelweit, F., Findlay, G. M., and Howard, E. M. The Size of Coxsackie Viruses as Estimated by Filtration Through Gradocol Membranes. *Brit. J. Exper. Path.* 31:809–812 (Dec.), 1950.
14. Casals, J., and Olitsky, P. K. Complement Fixation Tests with Some of the Viruses in the Coxsackie Group. *Federation Proc.* 9:570–573 (Sept.), 1950.

15. Casals, J., Olitsky, P. K., and Murphy, L. C. Hemagglutination and Complement Fixation with Types I and II Albany Strains of Coxsackie Virus. *Proc. Soc. Exper. Biol. & Med.* 72:636–638 (Dec.), 1949.
16. Howitt, B. F., and Benefield, V. R. Use of Complement Fixation in the Differentiation of Strains of Coxsackie Virus. *Proc. Soc. Exper. Biol. & Med.* 73:90–92 (Jan.), 1950.
17. Kraft, L. M., and Melnick, J. L. Immunological Reactions of the Coxsackie Viruses. II. The Complement Fixation Test. *J. Exper. Med.* 92: 483–497 (Nov. 1), 1950.
18. Manire, G. P., Sulkin, S. E., and Farmer, T. W. Complement Fixation with a Coxsackie Virus. *Proc. Soc. Exper. Biol. & Med.* 73:341–343 (Mar.), 1950.
19. Melnick, J. L., Clarke, N. A., and Kraft, L. M. Immunological Reactions of the Coxsackie Viruses. III. Cross-protection Tests in Infant Mice Born of Vaccinated Mothers. Transfer of Immunity Through the Milk. *J. Exper. Med.* 92:499–505 (Nov. 1), 1950.
20. Melnick, J. L., and Kaplan, A. S. Dual Antibody Response to Coxsackie and Poliomyelitis Viruses in Patients with Paralytic Poliomyelitis. *Proc. Soc. Exper. Biol. & Med.* 74:812–815, (Aug.), 1950.
21. Melnick, J. L., and Ledinko, N. Immunologic Reactions of the Coxsackie Viruses. I. The Neutralization Test: Technic and Application. *J. Exper. Med.* 92:463–482 (Nov. 1), 1950.
22. Olitsky, P. K., Casals, J., and Murphy, L. A. Diagnostic Tests with Albany Types I and II Coxsackie (Dalldorf) Virus. *Federation Proc.* 9:388–389 (Mar.), 1950.
23. Sickles, G. M., and Dalldorf, G. Serologic Differences Among Strains of the Coxsackie Group of Viruses. *Proc. Soc. Exper. Biol. & Med.* 72: 30–31 (Oct.), 1949.
24. Sulkin, S. E., Manire, G. P., and Farmer, T. W. Cross-neutralization Tests with Coxsackie Viruses. *Proc. Soc. Exper. Biol. & Med.* 73:340–341 (Mar.), 1950.
25. Slater, E. A., and Syverton, J. T. The Cultivation of Coxsackie Virus. *Proc. Soc. Exper. Biol. & Med.* 74:509–510 (July), 1950.
26. Huebner, R. J., Ransom, S. E., and Beeman, E. A. Studies of Coxsackie Virus. Adaptation of a Strain to Chick Embryos. *Pub. Health Rep.* 65:803–806 (June 23), 1950.
27. Beeman, E. A., Huebner, R. J., and Cole, R. M. Studies of Coxsackie Viruses. Laboratory Aspects of Group A. Viruses. *Am. J. Hyg.* (In press.)
28. Melnick, J. L., and Ledinko, N. Infection of Cynomolgus monkeys with the Ohio Type of Coxsackie Virus (C-virus). *J. Immunol.* 64: 101–110 (Feb.), 1950.
29. Armstrong, M. P., Wilson, F. H., McLean, W. J., Silverthorne, N., Clark, E. M., Rhodes, A. J., Knowles, P. S., Ritchie, R. C., and Donohue, W. C. Studies on Poliomyelitis in Ontario. II. Isolation of the Coxsackie Virus in Assocation with Poliomyelitis Virus: A Preliminary Report. *Canad. J. Pub. Health* 41:51–59 (Feb.), 1950.
30. Rhodes, A. J., Clark, E. M., Knowles, D. S., Shimada, R. C., Ritchie, W. L., Donohue, W. L., Armstrong, M. P., Wilson, F. H., McClean, W. J., and Silverthorne, N. Studies on Poliomyelitis in Ontario. III. Further Observations on the Association of Coxsackie and Poliomyelitis Viruses. *Canad. J. Pub. Health* 41:183–188 (May), 1950.
31. Findlay, J. M., and Howard, E. M. Coxsackie Viruses and Bornholm Disease. *Brit. M. J.* 4664: 1233–1236 (May 27), 1950.
32. Von Magnus, H. Isolering af Tre Virus-stammer af Coxsackie Gruppen fra Patienter med Meningeale Symptomer. *Ugesk. f. laeger* 111:1451–1453 (Dec. 22), 1949.
33. Lepine, P., Thieffry, S., Beinie, L., Sautter, V., and Martin, Mme. Presence en France d'Infections Humaines du Groupe Coxsackie (Virus C). *Ann. Inst. Pasteur* 80:200–203 (Feb.), 1951.
34. Foreign Letters. *J.A.M.A.* 145:1215 (Apr. 14), 1951.
35. Curnen, E. C. Human Disease Associated with the Coxsackie Viruses. *Bull. New York Acad. Med.* 26:335–342 (May), 1950 .
36. Zahorsky, J. Herpangina (A Specific Disease). *Arch. Pediat.* 41:181–184 (Mar.), 1924.
37. Levine, H. D., Hoerr, S. D., and Allanson, J. C. Vesicular Pharyngitis and Stomatitis. An Unusual Epidemic of Possible Herpetic Origin. *J.A.M.A.* 112:2020–2022 (May 20), 1939.
38. Breese, B. B., Jr. Aphthous Pharyngitis. *Am. J. Dis. Child.* 61:669–674 (Apr.), 1941.
39. Cheever, F. S., Daniels, J. B., and Hersey, E. F. A Viral Agent Isolated from a Case of "Non-paralytic Poliomyelitis" and Pathogenic for Suckling Mice: Its Possible Relation to the Coxsackie Group of Viruses. *J. Exper. Med.* 92:153–167 (Aug. 1), 1950.
40. Curnen, E. C., Shaw, E. W., and Melnick, J. L. Disease Resembling Non-paralytic Poliomyelitis Associated with a Virus Pathogenic for Infant Mice. *J.A.M.A.* 141:894–901 (Nov. 26), 1949.
41. Dalldorf, G., Sickles, G. M., Plager, H., and Gifford, R. A Virus Recovered from the Feces of "Poliomyelitis" Patients Pathogenic for Suckling Mice. *J. Exper. Med.* 89:567–582 (June 1), 1949.
42. Farmer, T. W., Manire, G. P., and Sulkin, S. E. Infections with the Coxsackie Virus Observed During an Epidemic of Poliomyelitis in Texas in 1949. Abstract of paper presented at the 4th Annual Meeting of the Southern Society for Clinical Research in New Orleans, La., Mar. 18, 1950. *Am. J. Med.* 9:398 (Sept.), 1950.
43. Melnick, J. L., Ledinko, N., Kaplan, A. S., and Kraft, L. M. Ohio Strains of a Virus Pathogenic for Infant Mice (Coxsackie Group). Simultaneous Occurrence with Poliomyelitis Virus in Patients with Summer Grippe. *J. Exper. Med.* 91:185–195 (Feb.), 1949.
44. Pappenheimer, A. M., Daniels, J. B., Cheever, F. S., and Weller, T. H. Lesions Caused in Suckling Mice by Certain Viruses Isolated from Cases of So-called Non-paralytic Poliomyelitis and Pleurodynia. *J. Exper. Med.* 92:169–190 (Aug. 1), 1950.
45. Kilbourne, E. O. Diverse Manifestations of Infection with a Strain of Coxsackie Virus. *Federation Proc.* 9:581–584 (Sept.), 1950.
46. Shaw, E. W., Melnick, J. L., and Curnen, E. C. Infection of Laboratory Workers with a Virus Pathogenic for Infant Mice. *Ann. Int. Med.* 33: 32–40 (July), 1950.
47. Dalldorf, G., and Gifford, R. Clinical and Epidemiologic Observations of Coxsackie Virus Infection. *New England J. Med.* 244:868–873 (June 7), 1951.
48. Dalldorf, G. Personal communication (June), 1951.
49. Beeman, E. A., Parrott, R. H., and Cole, R. M. Simultaneous Occurrence of Two Immunological Types of Group A "Coxsackie" Virus in a Case of Herpangina. *Proc. Soc. Exper. Biol. & Med.* (In press.)

Brill's Disease. IV. Study of 26 Cases in Yugoslavia*†

EDWARD S. MURRAY, M.D., TADIJA PŠORN, M.D., PREDRAG DJAKOVIĆ, M.D., STANKO SIELSKI, M.D., VILIM BROZ, M.D., FRANJO LJUPŠA, JAKOB GAON, M.D., RADE PAVLEVIĆ, M.D., AND JOHN C. SNYDER, M.D.

Department of Microbiology, Harvard School of Public Health, Boston, Mass.; Doboj, Gračanica, Tuzla, and Sarajevo, Yugoslavia; and Department of Microbiology, Harvard School of Public Health

IN 1934 Zinsser defined Brill's disease as sporadic typhus occurring in the absence of lice among immigrants to the United States from the typhus-ridden areas of southeastern Europe.[1] Subsequently, physicians in Switzerland,[2] France,[3, 4] England,[5] and Portugal[6] reported occasional cases of Brill's disease among immigrants and displaced persons from the typhus regions of Europe. There are no reports, however, that Brill's disease has been recognized as such in any area where typhus fever actually occurs in epidemics among the local population. If Brill's disease is indeed a recrudescence of typhus in individuals who previously have had the disease, as postulated by Zinsser,[1] then it should be occurring at the present time in those parts of the world where typhus epidemics have been widespread in the past 25 to 50 years.

To investigate this possibility, we undertook a search for Brill's disease in Bosnia, Yugoslavia, where we know from direct personal observation that many persons suffered epidemic louse-borne typhus during World War II.

MATERIALS AND METHODS

Case Finding—Early in July, 1950, a 10 day tour of eastern Bosnia was made to acquaint the doctors in the hospitals and the outlying dispensaries with the clinical and serological characteristics of Brill's disease as it is found in the United States.[7, 8]

We asked the Yugoslavian physicians to telephone or telegraph us when they found a patient with a fever, a severe intractable headache, and a previous history of typhus. We promptly visited each patient thus brought to our notice. We concentrated on questioning him, his family, and his associates to learn the day and hour of onset of his symptoms. Wherever possible, the patient was sent at once to a hospital, where the course of the disease, the development of a rash, and the approximate hour of defervescence of the fever could be recorded. Blood specimens were obtained as described below.

Serological Methods—A small mobile laboratory for taking blood and for performing rickettsial agglutination tests was assembled in Bosnia with the aid of the Bacteriology and Epidemiology Departments of the Faculty of Medicine in Sarajevo.

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

† This study was supported in part by grants from the Lederle Laboratories Division of the American Cyanamid Company, and the Division of Research Grants and Fellowships of the National Institutes of Health, U. S. Public Health Service. The laboratory work in the Harvard School of Public Health was conducted with the aid of a contract from the Virus and Rickettsial Disease Commission, Armed Forces Epidemiological Board, Department of the Army, Office of the Surgeon General, Washington 25, D. C.

With the exception of Case No. 19, we obtained from each patient in this study at least two serum specimens, more than two weeks apart, with one of the specimens drawn between the 12th and 20th days of illness. Phenylmercuric borate in a final concentration of approximately 1/20,000 was added as a preservative to the serum specimens, which were stored at +5° C. in Yugoslavia for several weeks, then transported without refrigeration during three days by air from Yugoslavia to the United States. Subsequently the specimens were stored at —20° C.

Rickettsial Agglutination Test—In Yugoslavia a macroscopic agglutination test using specific epidemic typhus rickettsiae was performed on each of the specimens. Serial dilutions of the serum in saline were made, and a drop of each dilution was mixed in a small conical tube with one drop of the rickettsial suspension (Parke, Davis specific epidemic) diluted 1 to 10 with 0.5 per cent normal human serum in 0.85 per cent NaCl. Incubation was carried out at 42° C. for four hours and then overnight in the icebox. Readings were made one half-hour after removal from the icebox and checked again four hours later. Endpoints were set at the last tube showing complete agglutination: clearing of supernatant with easily visible clumps of agglutinated rickettsiae adhering to the sloping sides of the conical tubes.[9]

Complement-Fixation Test—In the United States all the sera from each particular patient were examined together in the same test for specific antibodies to epidemic and murine typhus. Tests were carried out using twofold dilutions of serum beginning at 1 to 10; we followed the method used by the Army Medical Department Research and Graduate School.[9, 10]

Weil-Felix Test—All sera were tested in the United States for agglutinins against *Proteus* OX19, OX2, and OXK. The antigens were prepared according to the method described by Bridges.[12] These tests were performed as recommended by the Army Medical Department Research and Graduate School.[13] In Yugoslavia the various laboratories used a slightly less specific Weil-Felix method to test the sera for *Proteus* OX19 agglutinins. There was a small difference in the results obtained by the two methods; this is reported on and discussed elsewhere.[14]

Composition of the Study Groups—During July and August of 1950, while we were hunting for cases of Brill's disease in east Bosnia, we were called to see 38 patients who had fever, headache, a rash, and/or a history of a previous attack of typhus. In the rickettsial agglutination screen test, sera from 26 of these 38 cases had titers higher than 1/200, or serial specimens showed rises in titer of more than fourfold. These 26 cases are included as the group of probable Brill's disease patients.

Twelve of the 38 cases failed to develop any increase in titer of rickettsial agglutinins in the screen test and their maximum titers were less than 1/200. On the basis of subsequent clinical and laboratory findings they were finally classified as typhoid fever, streptococcal sore throat, dysentery, grippe, or influenza. In addition, we studied 10 cases in an outbreak of proven Q fever in a Bosnian village.[15, 16] These cases, along with the 12 described above, are considered together as a comparison group of 22 individuals who did not fit into the Brill's disease pattern on the basis of serologic tests, clinical features, or epidemiologic findings.

OBSERVATIONS

Table 1 contains the principal facts obtained from the 26 cases. Certain points are given separate consideration subsequently.

Age and Sex—Ages varied from 9 to

TABLE 1

Data from 26 Cases of Brill's Disease
Bosnia, Yugoslavia, July–August, 1950

Case No.	Initials	Sex	Age	Residence	Date Previous Attack of Typhus	Date of Onset 1950	Duration of Fever (Days)	Hospitalized	Headache	Rash
1	R. B.	M	9	Travnik	1942	July 23	<6	Yes	+	0
2	H. S.	M	10	Gračanica	?	Aug. 13?	?	No	?	?
3	G. P.	M	14	Banja Luka	1943–44	June 24	7	Yes	+	+
4	D. B.	M	25	Lopare	1938	Aug. 2	7¾	Yes	+	0
5	B. M.	M	26	Doboj	1942	Aug. 8	7¾	Yes	+	+
6	C. E.	M	27	Tuzla	1943	Aug. 5	8¼	Yes	+	+
7	T. P.	M	28	Brčko	1945	Aug. 4	7	Yes	+	0
8	B. P.	M	32	Tuzla	?	Aug. 3	9½	Yes	+	+
9	G. G.	M	40	Gračanica	1945	July 26	9	Yes	+	0
10	S. D.	M	40	Kladanj	1944	July 15	8¼	Yes	+	+
11	D. M.	M	45	Gračanica	1943	July 20	9	Yes	+	0
12	C. I.	M	47	Tuzla	1943	July 28	7¾	Yes	+	0
13	M. V.	M	48	Zvornik	1942	June 27	8	Yes	+	0
14	H. S.	M	51	Sarajevo	?	July 14	10½	Yes	+	+
15	V. T.	F	19	Zvornik	1944	July 2	9	Yes	+	0
16	R. T.	F	20	Tuzla	1944	June 30	9	No	+	?
17	H. M. Z.	F	23	Sarajevo	?	June 20	10½	Yes	+	++
18	V. R.	F	23	Doboj	1944–45	June 27	9	Yes	+	0
19	T. J.	F	23	Skoplje	1944	Aug. 16	7	Yes	+	+
20	P. T.	F	33	Gračanica	1943	June 24?	8–12	No	+	+
21	P. P.	F	35	Gračanica	1945	July 26?	8–12	No	+	?
22	K. M.	F	36	Doboj	1945	July 23?	8–12	No	+	?
23	M. A.	F	37	Gračanica	1944	June 28	9½	Yes	+	+
24	S. D.	F	38	Lopare	1939	Aug. 1	8½	Yes	+	0
25	A. H.	F	47	Doboj	1943	July 22	10	No	+	0
26	T. M.	F	56	Doboj	1943	July 12	8	No	?	?

56 years. Fourteen of the patients were male; 12 were female. Table 2 shows the age distribution of the male and female cases.

TABLE 2

Age and Sex of Brill's Disease Cases
Bosnia, July–August, 1950

Age Group	Number of Cases		
	Male	Female	Total
Years			
Under 10	1	0	1
10–19	2	1	3
20–29	4	4	8
30–39	1	5	6
40–49	5	1	6
50–59	1	1	2
Total	14	12	26

Geographical Distribution—Most of the cases were found in the three towns of eastern Bosnia where we searched most intensively, namely Gračanica (6 cases), Tuzla (6 cases), and Doboj (5 cases). As the summer progressed, the physicians in these towns developed familiarity with the Brill's disease syndrome and became surprisingly adept at recognizing cases in the early phase of the illness. The other cases in this study were discovered on survey trips through the surrounding areas: two were found in Sarajevo, two in Zvornik, and one each in Banja Luka, Travnik, Kladanj, Brčko, and Skoplje. The patient in the last-named town had traveled there from Macedonia 12 days before the onset of her illness.

Previous Attacks of Typhus—All 26 patients were questioned about previous attacks of typhus. Twenty-one patients stated emphatically that they had had typhus between 1938 and 1945. They recalled the exact year of their attack and described the details of their illness with sufficient clarity to permit identification as probable typhus fever. Eight of these 21 patients not only were emphatic and specific about having had typhus themselves, but also were certain that two or more persons in their homes

and many people in their villages had been sick with typhus during the same winter or spring. Five patients either did not recall having had typhus or were vague about the date and the character of a previous attack. Thus, 21 of the cases (80 per cent) gave a satisfactory history of having suffered a previous attack of typhus some time between 1938 and 1945.

Previous Immunization Against Typhus—No evidence was obtained that any of the patients had received typhus vaccine at any time.

Clinical Findings—Of the 26 cases of Brill's disease studied in Bosnia, 19 were hospitalized; 7 other cases were examined in the village dispensaries or in their homes in the hills. The clinical data presented below were obtained from the 19 hospitalized patients, who were examined carefully and frequently.

Headache

All 19 hospitalized patients complained of headache. This was the most characteristic single feature associated with the disease. It was severe, persistent, and intractable to medication. It usually persisted throughout the febrile period, ceasing abruptly when the temperature returned to normal.

Rash

A rash was observed in 9 of the 19 hospitalized cases. In one case, the rash involved all of the body except the palms and soles and persisted well into convalescence. In the other 8 cases, the rashes varied from sparse and evanescent, lasting one or two days, to "moderate" by comparison with the rash as usually seen in widespread outbreaks of epidemic typhus. In 10 of the cases, no rash whatever was noted at any time during the illness.

Duration of Fever

A great deal of effort was made to determine the exact day and hour of onset of disease, particularly in the hospitalized cases. In several instances visits were made to the homes of patients in order to question at length not only the patients themselves but also their relatives, employers, and friends concerning the circumstances surrounding the onset of the disease. The data are analyzed in Table 3.

TABLE 3

Duration of Fever of 26 Cases of Brill's Disease Bosnia, 1950

19 Hospitalized Cases		*7 Non-hospitalized Cases*	
Total Days of Fever	*Number of Patients*	*Total Days of Fever*	*Number of Patients*
<6	1[a]		
7– 7¾	6[a]		
8– 8¾	4	8	1
9– 9¾	6	9	1
10–10¾	2[b]	10	1
11 and longer	0	8–12	3
		Unknown	1

[a] One case, aged 9, was febrile <6 days. One case, aged 14, was febrile 7 days exactly.

[b] Case No. 17 showed a marked drop in temperature at 10½ days, with disappearance of headache. Forty-eight hours later the temperature rose again to 103° F. and remained elevated for 2½ more days. There was evidence of pulmonary involvement, with rales and altered breath sounds during this second febrile period; no return of headache or mental confusion.

The mean duration of fever for the 19 hospitalized cases was 8½ days, varying from <6 to 10½ days. One of the patients whose temperature fell to normal after 10½ days had a 3 day secondary rise in temperature which was associated with pneumonitis but without return of headache or mental confusion. Among the 7 patients who remained at home, the duration of fever was known to be 8, 9, and 10 days for 3 cases; from 8 to 12 days for 3 cases; in one case the febrile period was not ascertained.

There were no deaths among the 26 patients. Convalescence was very rapid in most cases. For the 19 hospitalized cases, the day of discharge from the hospital ranged from 8½ to 14 days after the onset of illness. Patient B. M. (No. 5, Table 1), from whom we isolated a strain of rickettsia [17] walked five

miles from the hospital to his home 8½ days after onset of illness, 1½ days after his temperature had returned to normal. Patient T. J. (No. 19, Table 1) was found packing her belongings and getting ready to start out on a 3 day trip to Macedonia on the 10th day after onset of illness, 2½ days after her temperature had returned to normal. Only patient H. M. Z. (No. 17, Table 1) would have been considered severely ill by criteria used in the studies of the Egyptian typhus epidemic during 1943–1945.[18] Twenty-five of the 26 cases never appeared severely ill at any time. The outstanding complaint was the intense, intractable headache. None of the 26 patients was delirious or comatose. H. M. Z. was slightly confused during the 9th and 10th days of illness.

SEROLOGIC DATA *

A. Rickettsial Agglutination. Of the 26 cases, 23 had titers of 1/800 or higher in the rickettsial agglutination test at some time between the 12th and 20th day after onset of illness; the 3 remaining cases developed agglutinin titers of 1/400 or higher. All other sera tested during the summer, including all specimens from the 22 cases in our "comparison" group, had agglutinin titers ranging from negative at 1/10 to a maximum titer of 1/100 by this screen test. (Exception: the sera of 3 afebrile individuals who were reported to have suffered an attack of classical epidemic louse-borne typhus five months previously had titers of 1/100, 1/200, and 1/200, respectively.)

B. Complement-Fixation Specimens of all sera were tested in the United States with specific epidemic and murine complement-fixing antigens. The results of the rickettsial agglutination field tests were uniformly confirmed by the complement-fixation tests. In 23 cases, maximum titers reached 1/2,560 or higher at some time between the 12th and 21st day.† The 3 cases with maximum complement-fixation titers of 1/320, 1/640, and 1/1,280 developed rickettsial agglutination titers of 1/800 or higher. All patients had elevated murine as well as epidemic complement-fixation titers; however, in every instance the epidemic titers were 4- to 16-fold higher than the murine titers.

C. Weil-Felix. Eighteen cases failed to agglutinate suspensions of *Proteus* OX19 at any time during the illness or the period of convalescence. Seven other cases developed maximum OX19 titers of 1/10 or 1/20. Patient H. M. Z. (No. 17) had a maximum titer of 1/80. In most laboratories 1/160 is the lowest titer generally agreed on as diagnostic. On this basis, none of the 26 cases developed a diagnostic titer in the Weil-Felix test.

Data from "Comparison" Group. In Table 5 the serologic data are presented from the 22 individuals whose illnesses were finally excluded from the typhus group on clinical, laboratory, or epidemiologic evidence. For the cases with positive titers to specific typhus antigens it is noteworthy that the values remained static through the non-typhus febrile episode, or at most, changed only one dilution. The fact that Q fever did not induce anamnestic responses in patients with a previous history of typhus has been discussed elsewhere.[15]

DISCUSSION

The 26 patients we have described undoubtedly were ill with typhus fever. Twenty-three had titers of more than 1/2,000 in the specific complement-fixation test with epidemic typhus antigen; the other 3 cases, with maximum

* The serologic data are summarized in Table 4.

† Exception: Case No. 19 had an epidemic titer of 1/5,120 on the 10th day after onset, which was the last day serum was obtainable; on this day the patient was found at home packing her belongings herself and preparing to set off that same day (3rd day of convalescence) for her home in Macedonia.

TABLE 4

Serologic Data from 26 Cases of Brill's Disease
Bosnia, 1950

Case No.	Initials of Patient	Day Serum Obtained After Onset of Illness	Denominators of Serum Dilution Endpoints				
				Complement-Fixation		Weil-Felix Proteus OX	
			Rick. Agglut.	Epidemic Antigen	Murine Antigen	19	2	K
1	R.B.	7		5,120	640+			
		13	1,600+	5,120	640	0	0	0
		40		1,280	160	0	0	0
2	H.S.	5?		2,560	320			
		20?	800	5,120	640	0	0	0
3	G.P.	17	800	5,120	640	0	0	0
		68		320	20	0	0	0
4	D.B.	8	800+	5,120	1,280+	20	0	0
		9		5,120	1,280+	20	0	10
		16		5,120	640	10	0	10
		29		1,280	640	0	0	0
5	B.M.	3.5	10	10	0			
		6.5		1,280	160			
		8.5		5,120	1,280			
		14	800+	5,120	640	0	0	0
		17.5		5,120	640	0	0	0
		22		2,560+	320	0	0	0
		25		5,120	640	0	0	0
6	C.E.	6		1,280	160	0	0	0
		9	1,600+	5,120	1,280+	10	0	0
		11		5,120	1,280+	10	0	0
		28		2,560	320	0	0	0
7	T.P.	8		2,560	640			
		15	800	5,120	1,280+	0	0	0
		25		2,560	640	20	0	0
8	B.P.	7.5		160	40			
		10.5	800	2,560	640			
		12.5		5,120	640	0	0	0
		27		2,560	320	0	0	0
9	G.G.	5	50	10	0			
		12		2,560	640			
		14	1,600+	2,560	320	0	0	0
		21		2,560	320	0	0	0
		32		1,280	160	0	0	0
10	S.D.	5	0	10	0			
		7		320	40			
		10	1,600	5,120	640			
		12		2,560	320	0		
		19		2,560	320	10	0	0
		39		2,560	320	0	0	0
11	D.M.	4	<50	20	0			
		6		640	80			
		10		2,560	640+			
		13	800+	1,280+	320			
		17		2,560	320	0	0	0
		38		640	160	0	0	0
12	C.I.	10	400+	2,560	640			
		12		2,560	320			
		14		2,560	320	0	0	0
		33		1,280	160	0	0	0
13	M.V.	17	800+	640	160	0	0	0
		64		320	80	0	0	0
14	H.S.	11.5	800+					
		20.5		1,280	160	0	0	0
		27		1,280	160	0	0	0
		49		640	40	0	0	0
15	V.T.	12	1,600+	10,240	1,280+	0	0	0
		59		1,280	160	0	0	0
16	R.T.	12	800	2,560	320	20	0	0
		61		640	80	0	0	0
17	H.M.Z.	9		<10	0	20	0	0
		12	800	80	0	80	0	0
		51		320	0	10	0	0
		73		160	0	0	0	0

TABLE 4 (*Cont.*)

Serologic Data from 26 Cases of Brill's Disease
Bosnia, 1950

Case No.	Initials of Patient	Day Serum Obtained After Onset of Illness	Denominators of Serum Dilution Endpoints					
				Complement-Fixation		Weil-Felix Proteus OX		
			Rick. Agglut.	Epidemic Antigen	Murine Antigen	19	2	K
18	V.R.	8		2,560	640			
		11	1,600	5,120	1,280			
		13		5,120	640	0	0	0
		23		2,560	320	0	0	0
		60		640	80	0	0	0
19	T.J.	5.5	50	320+	20			
		6.25		640	80			
		9.5	400	5,120	640	20	0	0
20	P.T.	15	400	5,120	640	0	0	0
		27		2,560	320	0	0	0
		63		640	160	0	0	0
21	P.P.	5	100	320	40			
		11	800+	2,560	640			
		16		2,560	320	0	0	0
		32		1,280	160	0	0	0
22	K.M.	6		160	20			
		16	800+	2,560	320	0	0	0
		41		1,280	160	0	0	0
23	M.A.	10		5,120	640			
		14	800	5,120	640	0	0	0
		60		640	160	0	0	0
24	S.D.	10.5	800	5,120	640			
		13		2,560	640			
		15		2,560	320	0	0	0
		26		2,560	320	0	0	0
25	A.H.	6	100	160	20			
		14	800	5,120	640	20	0	0
		35		1,280	160	0	0	0
		124		80	10			
26	T.M.	7		1,280	160			
		14	800+	2,560	640	0	0	0
		45		1,280	160	0	0	0

values of 1/320, 1/640, and 1/1,280, all had rickettsial agglutination titers of 1/800 or higher. From patient B. M. (No. 5, Table 1) a strain of rickettsia was isolated which proved to be indistinguishable from the standard laboratory strains of epidemic typhus by serologic and animal tests.[17] Such findings are compatible with only two diagnoses: (a) epidemic louse-borne typhus fever or (b) Brill's disease. We have asserted that the patients actually were suffering from Brill's disease. In support of this assertion, we cite the following points:

1. *No evidence of louse transmission was obtained.* During the summer of 1950, the County of Prijedor in western Bosnia reported 3 cases of typhus in a single family. The details are given in subsequent paragraphs. Elsewhere in Bosnia there were *no epidemics of typhus*. Furthermore, in eastern Bosnia, the area to which our project was largely confined, body lice were difficult to find during July and August of 1950. One of us (J. G.) spent three weeks attempting to set up a field trial of soaps with and without DDT to determine the effectiveness of this method for controlling louse infestation; lice were so rarely encountered, however, that the project had to be abandoned. The summer heat and drought were apparently inimical to louse infestation.

Although no exhaustive, methodical search was made for lice on the 26 patients and their clothing, the doctors, nurses, and orderlies caring for these cases denied noticing any lice. This, of course, does not preclude the possibility of louse transmission, but it is common knowledge that lice are all too obvious

TABLE 5

Serologic Data from 22 Comparison Cases
Bosnia, 1950

Case No.	Initials	Age	Sex	Day Serum Obtained After Onset of Illness	Denominators of Serum Dilution Endpoints					Final Diagnosis
					Rick. Agglut.	Complement-Fixation			Weil-Felix Proteus OX19	
						Epidemic Antigen	Murine Antigen	Q fever Antigen		
1	B.V.	48	M	5	±	10	0	0	0	Q Fever
				16		10	0	20	0	" "
				44		5	0	160		" "
2	B.H.	54	M	5	0	80	10	±	0	" "
				16		160	10	80	0	" "
3	A.P.	45	M	6	0	40	0	0	0	" "
				17		80	0	320	0	" "
4	B.Ag.	30	M	3	±	40	0	0	0	" "
				14		40	0	320	0	" "
				42		80	20	320		" "
5	B.Ad.	50	M	8	0	0	0	0		" "
				19		10	0	320	0	" "
6	N.I.	46	M	10	±10	40	0	0	0	" "
				21		40	0	80		" "
7	N.M.	33	M	7	0	10	0	40	0	" "
				18		10	0	640	0	" "
8	F.Hat.	20	F	3	±	20	0	0	0	" "
				14		±40	±40	±40	0	" "
9	F.Han.	56	F	4	0	40	0	±	0	" "
				15		40	0	320	0	" "
10	N.Z.	50	F	60	10	10	0	0	0	" "
				71		10	0	0	0	" "
11	L.	43	M	21	10	5		0	0	F.U.O.*
12	B.S.	13	M	20	<50	20	0	0		"
13	M.M.	20	M	2	0	0	0	0	0	"
				4	<50	0	0	0	10	"
				17	0	0	0	0		"
14	M.B.	37	F	21	±10	10	0	0	0	"
15	E.R.	26	M	17	0	0	0	0		"
16	S.F.	27	F	6	50	10		0	0	"
				10	±50	±10		0	0	"
17	S.L.	18	M	13	0	20+	0	0	0	"
				20		40	10			"
				24	10	40		0	0	"
18	I.M.	33	M	9.5		0	0	0	0	"
				14.5	<50	0	0	0	0	"
19	I.R.	27	M	4		20	0	0		"
				9	50	20	0	0	0	"
				13		20	0	0	0	"
20	S.S.	23	F	6	50	40	0	0	0	"
				8	±50	40	0	0	0	"
				9	50	40	0	0	0	"
				17		40	0	0	0	"
21	S.M.	25	M	5		80				"
				6	10	80	10	0	0	"
				9	±10	80	10	0	0	"
22	B.S.	59	M	4	50	40	10	0		"
				19	10	40	±	0	0	"

* Fever of unknown origin.

during an epidemic of louse-borne typhus.

2. *There were no secondary cases.* Intensive inquiry among the persons directly associated with each of our 26 patients failed to reveal a single case which had occurred either before, during, or after the illness in question. The 26 cases represented entirely separate, sporadic attacks of the disease related

neither to each other nor to any other case.

For all of Bosnia (population approximately 2,500,000), only 11 cases of "typhus" were reported officially during the period June 1 to August 31, 1950. Eight of the 11 cases occurred in widely separated areas of Bosnia, never more than 1 per county; it is interesting to note that only 1 of our 26 cases was included among the 8 in the official report (Case No. 17, Sarajevo). The remaining 3 officially reported cases occurred in a single Moslem family in the county of Prijedor, western Bosnia. The names, ages, dates of onset of illness, and results of Weil-Felix tests are shown in the following tabulation:*

Name	*Age*	*Date of Onset*	*Weil-Felix Test*
Esma Arnautović	28	June 30	Positive
Fatima Arnautović	18	June 30	Positive
Vahid Arnautović	11	June 27	Positive

These cases were not personally investigated by any of us. However, on epidemiologic and serologic grounds they present some interesting contrasts to the 26 cases which we studied during this same period. In the first place, these 3 cases in Prijedor all occurred in one family. The fact that the days of onset were almost identical suggests a common source of infection. All 3 cases in this family developed diagnostic Weil-Felix titers. This finding is discussed in paragraph No. 6 following. It seems probable to us that further study of the 3 cases in Prijedor would have shown them to be classical epidemic louse-borne typhus, not Brill's disease.

3. *Most of our 26 cases gave a definite history of a previous attack of typhus.* Second attacks of classical epidemic typhus attributed to louse transmission are believed to be uncommon or rare. At least it is uncommon during a widespread epidemic to find a person in the acute phase of the illness who gives a history of having had the disease previously. By contrast, 21 of the 26 cases in our series stated emphatically that they had had typhus between 1938 and 1945; these 21 patients recalled the specific year and described the clinical symptoms and signs consonant with a diagnosis of epidemic typhus. In addition, 8 of these 21 cases added weight to their history of a previous attack by stating that, while they themselves were ill, 2 or more persons in their families and many other persons in their villages were sick with typhus at the same time.

4. *The clinical course was short and mild.* In descriptions of the clinical course of epidemic typhus in adults, the febrile period of the disease is usually stated to range from 12 to 18 days, with an average of over 14 days. From our experience in typhus epidemics in Spain, Italy, Egypt, Iran, Turkey, Germany, and Yugoslavia between 1941 and 1945, we are fully aware of the considerable variation in the clinical severity; however, there is no doubt that a febrile period of less than 10 days for an adult is very rare if there has been no immunization and if no specific treatment is administered. By contrast, in our series, the 17 adult hospitalized cases, ages 19 to 51 years, had a mean duration of fever of 8.8 days. The other 2 hospitalized cases were children, 9 and 14 years, febrile <6 and 7.0 days; they are excluded from the calculation of mean duration of fever, since epidemic typhus is known to be of shorter duration in children. None of the 26 patients received any specific therapy and none had had typhus vaccine.

Little significance is attached to the fact that no deaths occurred in this series of 26 cases, since the case fatality rates vary considerably from one epidemic to another. The mortality in Brill's disease, which is also variable, has been previously reviewed.[7]

* Data supplied through the courtesy of Dr. Luka Simović and Dr. Jakob Gaon, Sanitary Epidemiologic Department, Sarajevo, Bosnia.

5. *A characteristic typhus rash was observed in only half of the group of 26 cases.* Only 9, or about half, of the hospitalized cases developed rashes. This is of questionable differential value, however, since 5 to 15 per cent of cases of epidemic typhus in relatively mild epidemics are variously reported to occur without rash. It has been pointed out that it would be unlikely for a clinician in America to suspect Brill's disease in a patient without a rash[7]; hence, the almost universal association of a rash with Brill's disease as it occurs in the United States may be the result of the operation of selective factors.

6. *The Weil-Felix reaction was negative.* The sera of many persons who are not ill and who have never experienced typhus fever agglutinate *Proteus* OX19 in low titer.[19] In most laboratories a value of 1/160 is the lowest titer generally accepted as diagnostic.[11] Even with this rather strict criterion, the reports of Weil-Felix tests from several epidemics of louse-borne typhus agree uniformly that more than 90 per cent of the cases develop strongly positive Weil-Felix titers with values usually above 1/1,000.[9, 20-23] The maximum response in the Weil-Felix test probably occurs in the interval from the 12th to the 20th day after onset of illness.[9, 22] For this reason we insisted, as a criterion of acceptance of a case within our study, that at least one of the two required sera be obtained between the 12th and 20th day after onset of illness.* If the 26 cases had been classical epidemic typhus, we would have expected the majority of the 12th-to-20th-day sera to have agglutinated *Proteus* OX19 at a serum dilution of at least 1/160.

On the other hand, in Brill's disease, Nathan Brill himself is quoted in 1928 as having been disappointed in the Weil-Felix reaction: ". . . the serum of Brill's disease patients seldom gives reactions in dilutions sufficiently high to be of diagnostic aid."[24] Between 1947 and 1949 we studied 14 Brill's disease patients from Boston, New York, Philadelphia, and Montreal. In 11 of these 14 cases the Weil-Felix titer did not rise above 1/40. Two others had maximum titers of 1/160 and 1/320 respectively, while only 1 had a titer of over 1/1,000.[7] Morgan, Neva, Fahey, and Finland[25] reported 2 cases of seriologically proved Brill's disease with Weil-Felix titers of 1/2,560 and 1/512. However, negative or low titer reactions to Weil-Felix tests in Brill's disease have been noted by several different authors (references cited in another report).[14]

In comparison, in our series of 26 cases not a single serum specimen reached a diagnostic titer of 1/160 with *Proteus* OX19 by the standard Army Medical School method. The highest titer obtained was 1/80 in Case No. 17. Six other cases had titers of 1/10 or 1/20; the sera of the remaining 19 patients remained negative throughout. This information strongly supports the view that the diagnosis for the 26 Bosnian cases is Brill's disease, not epidemic louse-borne typhus.

SUMMARY AND CONCLUSIONS

With the coöperation of Yugoslavian physicians, a search in eastern Bosnia during July and August, 1950, disclosed 26 cases of typhus fever. This diagnosis was established by rickettsial agglutination and rickettsial complement-fixation in every case; it was supported by the isolation of epidemic typhus rickettsiae from one of the patients. There was no evidence of louse infestation. There were no secondary cases. Most of the patients gave a definite history of a previous attack of epidemic typhus at a time (1942–1945) when many such cases were occurring in their villages.

Clinically, the illness was mild and short in duration, lasting less than 9

* For the one exception, see Table 4.

days for most of the patients. Convalescence was very brief. Rashes were found in about half the patients. There were no deaths.

The Weil-Felix reaction was negative.

It is concluded that the 26 cases of typhus in Bosnia were suffering from Brill's disease. The identification of Brill's disease in a typhus zone adds further support to Zinsser's hypothesis that man is the interepidemic reservoir of epidemic louse-borne typhus fever.

REFERENCES

1. Zinsser, H. Varieties of Typhus Virus and the Epidemiology of the American Form of European Typhus Fever (Brill's Disease). *Am. J. Hyg.* 20: 513–532, 1934.
2. Mooser, H., and Loeffler, W. Ein Fall Sogenannter Brillscher Krankheit in Zurich. *Schweiz. med. Wchnschr.* 76:150–153, 1946. Abstracted in *Trop. Dis. Bull.* 43:543, 1946.
3. Worms, R. Le Problème du Typhus Sporadique. Extrait de *La Semaine des Hôpitaux de Paris* 26: 1–13, 1950. Abstracted in *Trop. Dis. Bull.* 47:833, 1950. Trois Cas Sporadiques de Typhus Épidémique Observés à Paris. *Bull. et mém. Soc. méd. d.-hôp. de Paris* 66:54–57, 1950.
4. Giroud, P., Boyer, J., and Vargues, R. A Propos de Queiques Cas de Typhus Exanthématique Survenus chez des Sujets Non Parasités. *Presse méd.* 58:334–336, 1950.
5. Hawksley, J. C., and Stokes, E. J. A case of Brill's Disease in London. *Lancet* pp. 97–99 (July 15), 1950. Abstracted in *Trop. Dis. Bull.* 47:970, 1950.
6. Soares, J. A. Doenca do Brill. A Proposito de Tres Casos de Recrudescencia de Tifo Exantematico Historico Observados em Braga. *Bol. Inst. Sup. d. Hyg. Dwot. Ric. Jor.* V:1–18, 1950.
7. Murray, E. S., Baehr, G., Shwartzman, G., Mandelbaum, R. A., Rosenthal, N., Doane, J. C., Weiss, L. B., Cohen, S., and Snyder, J. C. Brill's Disease. I. Clinical and Laboratory Diagnosis. *J.A.M.A.* 142:1059–1066 (Apr. 8), 1950.
8. Murray, E. S., and Snyder, J. C. Brill's Disease. II. Etiology. *Am. J. Hyg.* 53:22–32, 1951.
9. Plotz, H., Bennett, B. L., Wertman, K. Snyder, M. J., and Gauld, R. L. The Serological Pattern in Typhus Fever. I. Epidemic. *Am. J. Hyg.* 47:150–165, 1948.
10. Smadel, J. E. Serologic Procedures for the Diagnosis of Rickettsial Diseases. *Diagnostic Procedures for Virus and Rickettsial Diseases.* New York: American Public Health Association, 1948. pp. 311–333.
11. *Ibid.*, p. 315.
12. Bridges, R. F. Note on the Preparation of Suspensions for the Weil-Felix Test. *Tr. Roy. Soc. Trop. Med. & Hyg.* 37:343–344, 1944.
13. Plotz, H. Weil-Felix Agglutination, in *Laboratory Methods of the United States Army* (Simmons and Gentzkow, *5th ed.*). Philadelphia: Lea and Febiger, 1944. pp. 575–578.
14. Murray, E. S., Ofstrock, A., and Snyder, J. C. The Weil-Felix reaction in Epidemic Typhus and Brill's Disease. To be published.
15. Murray, E. S., Djakovic, P., Ljupsa, F., and Snyder, J. C. An Outbreak of Q fever in Sokol, Bosnia, Yugoslavia, August, 1950. *Pub. Health Rep.* 66:1032–1037, 1951.
16. Simović, L., Vesenjak-Zmijanac, J., and Gaon, J. Epidemija Q-Groznice u Bosni Liječnički Vjesnik 6, 7:109–113, 1951.
17. Murray, E. S., Simon, D., and Snyder, J. C. Brill's Disease. V. Characterization of the Typhus Rickettsiae Isolated from a Case in Bosnia, Yugoslavia. To be published.
18. Ecke, R. S., Gilliam, A. G., Snyder, J. C., Yeomans, A., Zarafonetis, C. J., and Murray, E. S. The Effect of Cox-type vaccine on Louse-borne Typhus Fever. *Am. J. Trop. Med.* 25:447–462, 1945.
19. Felix, A. Technique and Interpretation of the Weil-Felix Test in Typhus Fever. *Tr. Roy. Soc. Trop. Med. & Hyg.* 37:327, 1944.
20. *Ibid.*, pp. 321–341.
21. Van Rooyen, C. E., Bowie, J. H., and Krikorian, K. S. Typhus Research in Egypt, Palestine, Iraq and Iran. *Tr. Roy. Soc. Trop. Med. & Hyg.* 38: 133–149, 1944.
22. Stuart-Harris, C. H., van den Ende, M., White, M. H. G., Hawley, W. L., Niven, J. S. F., Begg, A. M., Fulton, F., Hamilton, F., and Thomas, C. C. Chemotherapeutic Trials in Typhus Fever in Man, and a Report of the Naples Typhus Epidemic. Chemotherapeutic and Other Studies of Typhus. Medical Research Council Special Report Series No. 255, 1946. p. 87.
23. Zarafonetis, C. J. D. The Serological Reactions in the Rickettsial Diseases of Man. *Rickettsial Diseases of Man.* Washington, D. C.: American Association for the Advancement of Science, 1948. pp. 173–183.
24. Blatteis, S. R. Endemic Typhus Fever (Brill's Disease): A Report of One Hundred and Thirty-eight Cases. *M. Clin. North America* 2:1099–1108, 1928.
25. Morgan, H. R., Neva, F. A., Fahey, R. J., and Finland, M. Report of Two Serologically Proved Cases of Typhus Fever in Irish-born Residents of Boston. *New England J. Med.* 238:871–873, 1948.

ACKNOWLEDGMENTS: The authors wish to express their appreciation to Dr. Sergije Jankijević, Sanitary Inspector of Bosnia and Hercigovina, for his advice and assistance, which made this study possible.

The authors are indebted to the following physicians in Yugoslavia for their excellent cooperation in case finding: Drs. J. Bricelj and M. Orešković of Sarajevo; Dr. J. Kostič of Tuzla; Dr. P. Ledić of Kladanj; Dr. R. Krdjalič of Brčko; Dr. K. Ljahov of Zvornik; Dr. M. Midjic of Banja Luka; and Dr. M. Šerer of Travnik.

The technical assistance of Stepan Brlečič of Tuzla, and Miss Avis Offstrock and Mrs. Patricia L. Cottam of Boston is gratefully acknowledged.

Public Health Aspects of Water Fluoridation*

HERMAN E. HILLEBOE, M.D., M.P.H., F.A.P.H.A., AND DAVID B. AST, D.D.S., M.P.H., F.A.P.H.A.

Commissioner; and Director, Bureau of Dental Health, New York State Department of Health, Albany, N. Y.

AMONG the chief responsibilities of the public health officer is the prevention of disease. Public health administration stresses the proper utilization of principles and techniques designed to accomplish this purpose most effectively.

Public health administrators may look back with much satisfaction to the accomplishments in the prevention of communicable diseases which a few decades ago accounted for high mortality rates and which since 1900 show consistent and dramatic downward trends, some to the vanishing point. For example, in upper New York, typhoid fever in 1900 accounted for 32.1 deaths per 100,000 population and in 1947 had a rate of less than 0.05. Tuberculosis dropped from 161 to 27.3, pneumonia from 138 to 32.5, diphtheria from 26.9 to 0.2, and scarlet fever from 5.8 to 0.1.[1] These advances were accomplished as our knowledge of control methods increased and as new techniques were implemented.

Among the chronic diseases still to be controlled is dental caries, which is perhaps the most prevalent of all diseases to which mankind is subject. Dental caries affects practically the entire population and until very recently the only protection against tooth mortality from caries was the technical intervention of the dentist, who removed the carious process and replaced the lost tooth structure with a filling material.

It is only within recent years that dental health has been recognized as an important part of the generalized public health program. If for no other reason than because of the wide prevalence of dental caries and the concomitant results, this aspect of health service had to be studied for better control methods than were currently used. With the present complement of dentists available, about 75,000 in the country, and with practically the entire population needing dental attention, it is quite evident that only a fraction of the people will be treated. Thus, for large numbers of the public, and especially the child population, the annual increments of untreated dental caries lead to an accumulation of dental disease. At ages 20–35 our young men on the average present 4.2 teeth lost, 1.0 tooth to be extracted, 7.2 carious tooth surfaces requiring fillings, and 9 out of 10 mouths in need of bridges, partial or full dentures.

The public health officer faced with the problem of setting up a dental health program to meet this tremendous need must decide what part of the problem he will attack, because it is evident that

* Presented before a Joint Session of the Dental Health, Engineering, and Health Officers Sections of the American Public Health Association, at the Seventy-ninth Annual Meeting in San Francisco, Calif., October 30, 1951.

limitations of funds and personnel preclude the possibility of a full-scale treatment of the problem.

It is for this reason that public health dental programs have been confined almost exclusively to the child population and that public health dentists have devoted much of their time to research toward the prevention of dental caries.

It is therefore with much satisfaction that the public health officer views the progress which has been made recently along several lines of caries prophylaxis. Among the most promising techniques for caries prophylaxis is that of water fluoridation. Much has already been published in the literature on the history of the caries fluorine hypothesis. The brilliant epidemiological studies in this field constitute a milestone in public health.

The great growth of interest in water fluoridation results from public recognition of the prevalence of dental caries and from realization that protective measures can be taken on a community-wide basis through the treatment of the public water supply so that ultimately the whole community will benefit. Such community-wide action is typical of other practices in the field of environmental sanitation, such as the installation of water purification equipment to reduce water-borne diseases, which benefits all consumers of water without the need of individual participation. Water fluoridation is therefore an extension of standardized water treatment procedures designed to improve the health of the consumers.

This treatment procedure is subject to general supervision and control by health departments in a manner long established by practice. The type of equipment employed is identical to that heretofore used in the application of other water treatment chemicals. Laboratory control procedures for fluoridation are also similar in principle to those highly standardized in the control of water chlorination. The qualifications of operators responsible for the control of water fluoridation equipment are similar to those governing the qualifications of water-chlorination plant operators.

Recently we have had a number of published reports of studies in which public water supplies, having less than the optimum concentration of fluorine, are being treated with a fluoride compound in order to bring the fluorine concentration up to approximately 1.0 p.p.m.[23] These reports are very encouraging and while they do not hold out any prospect of complete caries prophylaxis, the potential reduction of new caries in children by 60–65 per cent give us reason to believe that this disease can be controlled and that tooth mortality as a result of caries can be reduced almost to the zero point.

This was very effectively demonstrated in a report on the Newburgh-Kingston Caries Fluorine Study, in which a breakdown of the DMF rates for first permanent molars of the 6 to 9 year old children in Newburgh after four years of fluoride experience is compared with that[3] for the same age group in Kingston. These data showed that the percentage of filled teeth in each city was comparable, indicating that the same amount of dental care is being rendered in both cities. However, the percentage of lost first molars in Newburgh decreased by 60 per cent and the untreated carious first molars decreased by 68 per cent; whereas in Kingston the first molar loss was decreased by 24 per cent and the unmet needs by 36 per cent. If this trend should continue, we may reach a point where with the present complement of practising dentists we are able to treat such caries as occur and significantly reduce tooth mortality and untreated caries. It is this potentiality which is so encouraging to the public health officer.

In the State of New York an increasing number of cities and towns are

planning fluoridation of their water supplies. The City of Newburgh is continuing water fluoridation, and plans have been approved by the New York State Department of Health for Schenectady, Hudson, Olean, New Rochelle, and Troy. Indeed, it should be added that every major city in the state has plans under consideration.

The health officer must constantly be alert to advances being made in the field of public health. When a new technique is reported, it is his responsibility to evaluate it and, if he finds it satisfactory, to implement it. In evaluating a public health program, the health officer must not only determine its effectiveness but its safety, practicability, cost, and methods of control. In so far as the effectiveness of water fluoridation is concerned, the reports published to date are very encouraging.

When any new technique is advanced, especially one using a potentially toxic substance, the question of safety must be considered. There is ample evidence today to believe that water-borne fluorides when ingested present no other hazard than mottled enamel, which does occur and is detectable when the fluorine concentration exceeds 1.5 p.p.m. It is pertinent to indicate that fluorine is found naturally in most water supplies in varying concentrations up to 15 p.p.m. For many years, more than three million persons in the United States have been using water supplies naturally containing fluorine in concentration of 0.9 to 5.1 p.p.m.

More than one million persons use water naturally containing 1.0 to 1.5 p.p.m. F. More than nine hundred thousand use water containing 1.6 to 2.0 p.p.m. F. More than six hundred thousand use water containing 2.1 to 3.0 p.p.m. F. More than one hundred thousand use water containing 3.1 to 5.0 p.p.m. F. More than forty thousand people use water containing 5.1 or more p.p.m. F.[4]

The addition of fluoride compounds to water supplies deficient in the optimum concentration is not to be considered as mass medication or as a therapeutic measure. As just noted, most waters naturally contain some fluorine and the objective of water fluoridation is to control the concentration of the fluoridation at the optimum level. This is true of waters containing excessive fluoridation and those deficient in this element. In so far as considering the addition of fluoride compounds a therapeutic measure is concerned, we must remember that fluorine has no effect on existing caries; its beneficial effect is to prevent, not to cure, dental caries.

There have been no reports of deleterious effects other than dental fluorosis from any area using fluoridated water. On the contrary, such pediatric studies as are being made in Newburgh and Kingston indicate that there are no differences noted in the Newburgh and Kingston children. McClure's studies on height, weight, and bone fracture experience among adolescents and young adults from fluoride and fluoride-free areas show no differences.[5] Studies in fluoride retention where appreciable amounts of fluoride were ingested indicate that the body has a very efficient mechanism for fluoride elimination through the urine, feces, and sweat. It is therefore reasonable to assume that controlled water fluoridation is a safe public health procedure.

It is not surprising that some individuals are still questioning the safety factor. Fifty years from today when water fluoridation probably will be an accepted and routine public health practice there may still be some who will question it just as there are those today who question water purification through chlorination. There are many who remember the difficulties encountered in getting chlorination accepted generally and the legal battles which had to be fought. The same kind of

arguments are being advanced today in the case of water fluoridation.

In terms of public health procedures, water fluoridation is a very practical technique. Its practicability from the health officer's point of view lies in the ease with which it can be brought to all the people without their having to go get it.

Along with practicability one must consider the cost of the program. There is nothing so frustrating as to have an effective technique that costs more than the budget director or taxpayer considers economical. The public health dollar has to be cut into many sections and each section carefully considered. With water fluoridation, we have a technique which costs from 5 to 15 cents per capita per year and which will ultimately affect the entire population, reducing a highly prevalent disease and reducing the cost for dental service by millions of dollars.[6]

The cost of fluoridation depends, of course, upon the amount of fluorine in the water before fluoridation, the size of the community, and the per capita use of water. In Evanston, Ill., the cost of providing sodium fluoride for one year was a little over 10 cents per capita. When sodium silicofluoride is used, the cost is from 4 to 5 cents per capita.

A report by Klein and Palmer on the wide disparity between annual increments of dental caries and corrections made estimated that children develop in excess of one new cavity a year.[7] If we estimate the cost of a simple filling at from $3 to $5, or multiply that cost manyfold to take care of accumulated defects, water fluoridation presents a sound economic investment by the taxpayer.

One of the basic responsibilities of a health officer in implementing a public health practice involving potentially toxic substances is that of providing adequate control measures. In connection with water fluoridation, these controls consist of the measures listed below:

1. Adequate treatment equipment to insure accurate dosing
2. Having qualified water treatment operators
3. Providing for the safety of operators against fluoride dust inhalation
4. Provision of satisfactory laboratory facilities and qualified laboratory personnel to determine the concentration of fluorine in the raw and treated water

SUMMARY

Water fluoridation represents a significant advance in public health practice. By a relatively simple procedure of controlling the fluorine concentration of potable water at the optimum concentration, it may be possible to reduce dental caries by 60–65 per cent and, together with current dental practice, to reduce tooth mortality from caries almost to the vanishing point. This new technique can be accomplished at the relatively low per capita cost of 5 to 15 cents per year. The administration of this program presents no serious problem but it does impose on the health officer the responsibility for general supervision over the fluoridation process.

Public health dentists and sanitary engineers working together have given us another milestone in the control of disease in man. By forthright action, the public health officer can move forward in effectively implementing this program so that our next generation of children may approach adulthood with a full complement of teeth.

REFERENCES

1. *Sixty-ninth Annual Report, New York State Department of Health, Year Ending December 31, 1948*, Vol. 2.
2. Dean, H. T., Arnold, F. A., Jr., Jay, Philip, and Knutson, J. W. Studies on Mass Control of Dental Caries Through Fluoridation of the Public Water Supply. *Pub. Health Rep.* 65:1403 (Oct. 27), 1950.
3. Ast, D. B., Finn, S. B., and Chase, Helen C. Newburgh-Kingston Caries Fluorine Study. III. Further Analysis of Dental Findings, Including the Permanent and Deciduous Dentitions After Four Years of Fluoridation. *J. Am. Dent. A.* 42:188 (Feb.), 1951.
4. Hill, I. N., Jelinek, O. E., and Blayney, J. R. The Evanston Dental Caries Study. III. A Preliminary Study of the Distribution of Fluorine in

Communal Water Supplies in the United States. *J. Dent. Research* 28:398 (Aug.), 1949.
5. McClure, F. J. Nondental Physiological Effects of Trace Quantities of Fluorine, in *Dental Caries and Fluorine*. Washington, D. C.: American Association for the Advancement of Science, 1946. p. 74.
6. *Fluoridation in the Prevention of Dental Caries*. Chicago, Ill.: American Dental Association, 1951.
7 Klein, H., and Palmer, C. E. The Disparity Between Dental Needs and Dental Care in School Children of Hagerstown and Environs. *J. Am. Dent. A.* 28:1489 (Sept.), 1941.

Renewed Danger of Endemic Malaria

"The U. S. Public Health Service and many state health departments have recently been made acutely aware of a second massive wave of infected soldiers to return from foreign countries to our shores within the present decade." With these words, R. A. Vonderlehr, medical director in charge of the Service's Communicable Disease Center, accompanies a spate of documents designed "to alert public health officials and medical practitioners as to the probability of encountering malarial reintroductions into this country." He goes on to say that if the infections are discovered, diagnosed, treated and proper precautionary measures taken, the country can keep its present freedom from endemic malaria.

Some of the documents are not new but they are brought together as a current file. The first in point of time is a *Summary of Antimalarial Drugs*, reprinted from *Public Health Reports* of June 10, 1949. Included also is a summary of deliberations by a late 1950 meeting of the National Malaria Society Committee on Criteria To Determine when Malaria Ceases To Be an Epidemic Disease; an Outline of Procedures for the Malaria Surveillance and Prevention Program based on the criteria of the Malaria Society; a March, 1951, announcement that the parasitology laboratories of the Communicable Disease Center are the one central depository for all malaria slides reported to be positive; and finally, an August, 1951, alert to state and territorial officers that "significant numbers of armed forces personnel from Korea are experiencing attacks of vivax malaria after their return to this country and while they are not under military supervision, i.e., while they are on leave or after separation."

State health departments are asked to warn practising physicians to suspect malaria among patients presenting suggestive signs and symptoms and who have been in Korea during the past year.

All malaria slides believed to be positive, or those on which consultation is desired, should be sent to:

National Depository for Malaria Slides
Parasitology Laboratories
Communicable Disease Center
P. O. Box 185
Chamblee, Ga.

All this material is available from the Communicable Disease Center, 50 Seventh St., N.E., Atlanta 5, Ga.

Streptomycin Resistance of Coliform Bacteria from Turkeys Fed Streptomycin

MORTIMER P. STARR AND DONALD M. REYNOLDS

Division of Bacteriology, College of Agriculture, University of California, Davis, Calif.

DURING an investigation of the microbiological aspects connected with the use of streptomycin and other antibiotic supplements in turkey nutrition, we observed cases of considerable drug fastness in the intestinal microflora. Since the development of antibiotic-resistant strains of microbes has a bearing on the successful use of antibiotics as nutritional supplements, as well as on the use of these agents for chemotherapy, an examination was made of the streptomycin resistance of coliform bacteria from turkeys which had been on diets containing streptomycin. It is, of course, recognized that results with streptomycin cannot be equated completely with those expected using other antibiotics because of the relative ease with which streptomycin-resistant mutants arise.

Our first efforts were directed toward determining whether inclusion of streptomycin in the diet of poults results in the appearance of an intestinal microflora containing drug-resistant coliforms. Cultures for this purpose were isolated from two types of material.

In one type of experiment, intestinal contents were obtained at autopsy from turkey poults * which for about a month had been fed an adequate, high-soybean-oil meal ration (Kratzer, 1951) to which was added 50 mg. of streptomycin † per kg. of ration. This concentration is approximately twice the amount currently used in commercial poultry feeds containing streptomycin. Immediately after killing, the intestinal contents were removed aseptically from the region immediately anterior to the ileocaecal junction.

In a second type of experiment, the intestinal microflora was followed by periodic culturing from hatching until 5 to 6 weeks. Fecal samples were obtained from such turkeys by collecting droppings immediately after defecation, using aseptic precautions. In both cases, control birds on the adequate basal diet, but lacking streptomycin, were cultured in the same way.

Samples from both sources were treated in a similar fashion. Since this work is one phase of a general study of the over-all effect of antibiotics on the intestinal microflora of poultry, quantitative platings of intestinal contents and fecal material were carried out on a variety of culture media. The cultures with which we are presently concerned originated on quantitative pour plates of Bacto eosin-methylene-blue agar. After

* The generous coöperation of the Poultry Husbandry Division and especially of Professor F. H. Kratzer is gratefully acknowledged.

† The 50 mg. of streptomycin per kg. were added in the form of the calculated amount of Merck streptomycin mixture for oral veterinary therapeutic use, each gram of which was equivalent to 0.39 gm. streptomycin base.

18 to 48 hours' incubation at 37° C., typical coliform colonies were picked from these plates. These were replated as often as necessary to insure purity, via suspensions in sterile water.

Only cultures with typical coliform characteristics were retained for this study, i.e., Gram-negative, aerobic, nonsporeforming rods, which ferment lactose with the production of acid and gas. *Escherichia, Aerobacter,* and intermediate types were present. Stock cultures were maintained on yeast extract, glucose, and $CaCO_3$ agar, and stored at 4° C. Such storage procedure should have little effect on the drug fastness of highly streptomycin-resistant strains (Klein and Kimmelman, 1946).

Sensitivity to streptomycin was determined by the agar-streak method of Waksman and Reilly (1945). The bacterial cultures were grown on nutrient agar slants at 37° C. for 18 to 24 hours and then suspended in approximately 10 ml. of sterile water for testing. Nutrient agar plates were prepared containing graded amounts of streptomycin * (calcium chloride complex, Merck) as follows: 1.0 or 0.3 ml. of an appropriate aqueous streptomycin solution was placed in a 10 cm. Petri dish, 9 ml. of nutrient agar were added, and mixed thoroughly by swirling. The final streptomycin levels were 60,000, 30,000, 3,000, 1,000, 300, 100, 30, 10, 3, and 1 μg. per ml. of agar. After 20 to 24 hours' incubation at 37° C., results of growth were recorded and compared with control plates lacking streptomycin. The inhibitory endpoint was taken as that concentration of streptomycin which completely, or nearly completely, inhibited growth of the organism.

A total of 317 coliform cultures were tested for streptomycin resistance. One hundred and ninety-five of these (see Figure 1) originated from poults which

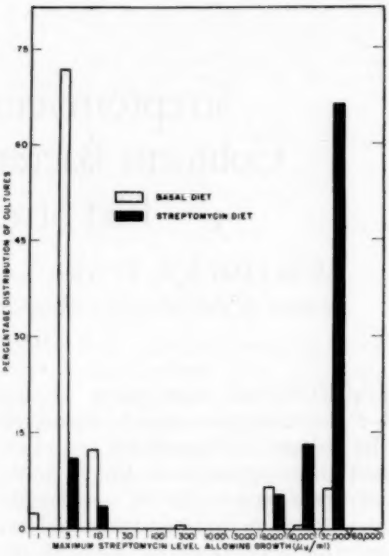

FIGURE 1—Distribution of streptomycin resistance in coliform cultures isolated at random from intestines of turkey poults, calculated as percentage of total number of cultures in each of the following categories: □ = 195 cultures from poults on basal diets; ■ = 122 cultures from poults on streptomycin diet.

had been on the basal control diet devoid of streptomycin. Most of the cultures from these control birds were sensitive to low concentrations of streptomycin, 74 per cent being inhibited by 10 μg./ml., and 86 per cent by 30 μg./ml. The occurrence in normal birds of streptomycin-resistant coliform cultures can be explained on several bases, such as: (1) the normal existence of a minority of resistant cells in a population (English and McCoy, 1951); or (2) the carriage of occasional bits of streptomycin-laden feed or feces by air currents or other agents to the cages of these control birds, followed by ingestion of such material, which might result in an unpredictable appearance of resistant forms.

On the other hand, the cultures isolated from birds on a streptomycin-containing diet were, as one would ex-

* A generous gift of streptomycin from Merck and Company, Rahway, N. J., is hereby gratefully acknowledged.

pect, generally highly resistant to the drug. Figure 1 shows that of the 122 such cultures examined, 66 per cent required a concentration of 60,000 μg. of streptomycin per ml. to prevent growth. The absence of forms intermediate in resistance is typical for streptomycin. Demerec (1948) considers the existence of slightly and highly streptomycin-resistant mutants to involve resistance gene loci of unequal "potency"; thus mutation of a low potency gene results in a slight increase in resistance, and mutation of a high potency gene gives a highly resistant strain.

Our experimental technique did not enumerate those streptomycin-resistant mutants which had also become streptomycin-dependent, inasmuch as they had little bearing on the public health problem which motivated this work. If these had been counted, the relative percentage of streptomycin-resistant coliforms in streptomycin-fed birds would be even higher than shown above.

In view of the fact that resistance to streptomycin develops in the intestinal coliform bacteria following the feeding of streptomycin to poults, it would be instructive to learn how quickly the change to a resistant flora takes place. Data on this point are available as a result of periodic quantitative bacteriological plating, from the day of hatching until about 6 weeks of age, of feces from poults on both the adequate basal diet and on the streptomycin diet. Fecal samples were obtained from such poults by collecting droppings, using aseptic precautions; these were then plated quantitatively on eosin-methylene-blue agar (EMB), and on EMB plus 100 μg. per ml. of streptomycin (EMBS). Figure 2 shows that the addition of streptomycin to the basal ration caused a rapid shift to a drug-resistant coliform population. The control birds remained relatively free of streptomycin-resistant coliform bacteria for several weeks, after

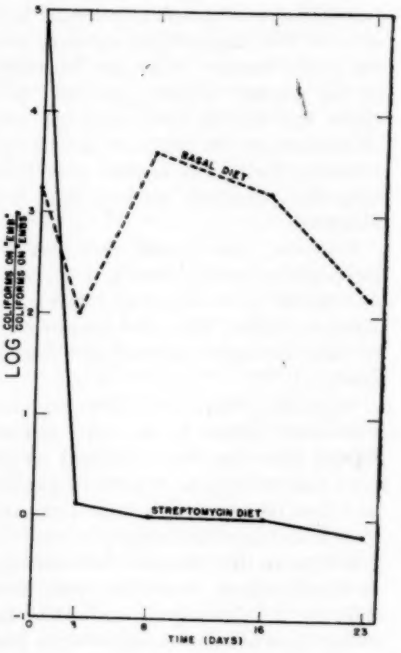

FIGURE 2—Numbers of streptomycin-resistant coliforms in the intestines of turkey poults on adequate diets containing or lacking added streptomycin. The coliforms were enumerated on eosin-methylene-blue agar (EMB) and on EMB plus 100 μg. per ml. of streptomycin (EMBS).

which there was a progressive increase in the proportion of drug-resistant component of the flora, probably caused by the inadvertent transfer of streptomycin to the nearby cages containing the control birds. The rapid development of streptomycin resistance in the coliform component of fowl intestinal flora shown here corresponds with the results obtained when streptomycin is administered orally to human beings to reduce the microflora of the lower gut prior to surgery (Miller and Bohnhoff, 1950).

It appears worthwhile to point out that the mass feeding of antibiotic drugs in routine diets of poultry and other domestic animals, with its concomitant development of drug-fast strains of in-

testinal bacteria, presents potential hazards to both agricultural industry and the public health. Since the economics of the poultry industry generally preclude the use of antibiotics for bird chemotherapy, the existence of drug-fast strains of pathogens in fowl is of little immediate practical interest from this viewpoint.

However, one should not overlook the potential utility of these drugs, such as reported by Kirkpatrick, Moses, and Baldini (1950), who used streptomycin to treat ulcerative enteritis in bobwhite quail.

A problem which is of a more serious, immediate nature is the very distinct hazard that drug-fast intestinal pathogens can develop in a flock of poultry and then be ingested by large farm animals in the same establishment, with the consequence that effective chemotherapy in those animals would be made more difficult. Salmonellosis provides the classic type of relationship between fowl and large animal diseases. It is widely believed that while certain species of *Salmonella* (e.g., *S. typhosa, S. paratyphi, S. abortus-equi*) are particularly adapted to specific hosts, a great number of other species (e.g., *S. typhimurium, S. enteriditis*) parasitize a broad spectrum of animal hosts. Fowl are considered to be a principal reservoir of the latter type of *Salmonella* (Hinshaw and McNeil, 1951). The large dosage generally required to cause these enteric infections is provided under barnyard conditions. The spread of antibiotic-resistant strains of *Salmonella* to larger animals on the same farm could indeed become a serious problem, for the increasing relative value of meat animals is making chemotherapy more and more important in the treatment of livestock diseases.

Larger than the agricultural problems noted is one concerned with public health itself and involving the greater question as to just how much indiscrimination should be permitted in the use of new chemotherapeutic agents.

As mentioned in the foregoing, numerous species of *Salmonella* capable of infecting a large variety of different hosts are widely distributed through the animal kingdom. Swine and poultry are outstanding among *Salmonella*-infectable animals which serve as human food, with respect to the high frequency with which they are found to harbor these enteric pathogens. In fact, Edwards, Bruner, and Moran (1948) have stated that birds still constitute the greatest reservoir of potential *Salmonella* infection. In any case, a fair consensus of informed opinion is that fowl and swine vie with each other for the position of the largest reservoir of human salmonellosis.

A cursory scrutiny of *Bergey's Manual* (Breed, *et al.*, 1948) will reveal that a large number of *Salmonella* species pathogenic to man are found in poultry. Outbreaks of food poisoning have been traced to fowl infected with typical food poisoning types; even those species commonly thought of as restricted to fowl (e.g., *S. pullorum* and *S. gallinarum*) have on occasions been isolated from human carriers and enteritis cases (Hinshaw and McNeil, 1951). Examination of over 6,000 samples of American dried eggs shipped to Britain during World War II showed that 10 per cent were infected with *Salmonella*; a number of British food poisoning outbreaks were ascribed to this source by extremely strong circumstantial evidence (Medical Research Council, 1947). Unequivocal proof of the virulence to man of *Salmonella* which originate in poultry is provided by the work of McCullough and Eisele (1951). Using three cultures each of *S. meleagridis* and *S. anatum* isolated from spray-dried egg powder, these workers produced carrier states or clinical cases or both ranging in severity from mild brief enteritis to serious prostrating ill-

ness, in 32 human volunteers with all six cultures.

It is indeed fortunate that outbreaks of food poisoning, enteritis, and typhoidal infections caused by *Salmonella* are not more common in man when one considers the size of the natural reservoir among poultry, swine, and other animals and the numerous routes by which the organisms are constantly contaminating the public food supply. A partial explanation for this low incidence is found in the work of McCullough and Eisele (1951), who found that large doses, on the order of 25 million cells per person, were necessary to bring about *Salmonella* infections in human volunteers.

The public health implications of the development of antibiotic-resistant flora in the poultry population are obvious. Though mutants tend to revert gradually to sensitivity in the absence of the drug, the route of infection from poultry to man can be so direct that the physician called upon to administer antibiotic chemotherapy for the more severe typhoidal types of human salmonellosis may be gravely handicapped by having to combat a drug-fast strain. With the sulfa drugs, and to some extent with penicillin, we have seen how drug fastness has in some instances seriously damaged the chemotherapeutic effectiveness of these agents (Miller and Bohnhoff, 1950). In these cases, development and spread of resistant pathogens was inevitable even with the best planned scheme of drug administration. It would be unfortunate if a large reservoir of drug-fast enteric pathogens potentially harmful to man accumulated unchecked in the poultry population. We hope that those charged with the protection of the public health will objectively evaluate this situation.

Another aspect of this public health question which merits investigation is the marked relative increase in numbers of yeasts or yeastlike organisms which arise in the bird gut under the pressure of antibiotic feeding (Kratzer, *et al.*, 1951). It is possible that some of these organisms may be pathogenic to man and may give rise to problems of antifungal human chemotherapy, for which efficacious drugs are lacking at present.

We grant that the poultry industry cannot readily forego the great economic advantages which accrue from the growth promoting effect of antibiotics on young birds. But it is strongly felt that a few years of research are likely to elucidate the fundamental mechanism underlying this growth promoting effect and that this information will permit agriculturalists to secure more rapid animal growth without inflicting potential hazards on the public health.

SUMMARY

The use of streptomycin as a growth promoting supplement in turkey poults results in the appearance within three days of streptomycin-resistant coliform bacteria. In 66 per cent of the drug-fast strains, resistance to the antibiotic rose to 60,000 μg. per ml. The potential hazard to veterinary and public health stemming from the indiscriminate use of antibiotic poultry-feed supplements is discussed.

BIBLIOGRAPHY

Breed, R. S., Murray, E. G. D., and Hitchens, A. P. *Bergey's Manual of Determinative Bacteriology*. Baltimore: Williams & Wilkins, 1948.

Demerec, M. Origin of Bacterial Resistance to Antibiotics. *J. Bact.* 56:63–74, 1948.

Edwards, P. R., Bruner, D. W., and Moran, A. The Genus *Salmonella*: Its Occurrence and Distribution in the United States. *Kentucky Agr. Exper. Sta. Bull.* 525, 1948.

English, A. R., and McCoy, E. A Study of Streptomycin Resistance in *Micrococcus pyogenes* var. *aureus*. *J. Bact.* 61:51–56, 1951.

Hinshaw, W. R., and McNeil, E. *Salmonella* Infection as a Food Industry Problem. *Advances in Food Research* 3:209–240, 1951.

Kirkpatrick, C. M., Moses, H. E., and Baldini, J. T. Streptomycin Studies in Ulcerative Enteritis in Bobwhite Quail. I. Results of Oral Administration of the Drug to Manually Exposed Birds in the Fall. *Abstracts of Papers at the 39th Annual Meeting of the Poultry Science Association*, Madison, Wis.

Klein, M., and Kimmelman, L. J. The Role of Spontaneous Variants in the Acquisition of Streptomycin Resistance by the Shigellae. *J. Bact.* 52:471–479, 1946.

Kratzer, F. H. The Growth Response to Vitamin B_{12} and Antibiotics in the Diet of Turkey Poults from Hens Fed Rations Containing no Animal Protein. *Poultry Science* (in preparation).

Kratzer, F. H., Grau, C. R., Starr, M. P., and Reynolds, D. M. The Growth-promoting Activities of Antibiotics and Yeast Cultures for Chicks and Turkey Poults. Unpublished report presented to the 1951 Meeting of the American Institute of Nutrition.

McCullough, N. B., and Eisele, C. W. Experimental Human Salmonellosis. I. Pathogenicity of Strains of *Salmonella meleagridis* and *Salmonella anatum* Obtained from Spray-dried Whole Egg. *J. Infect. Dis.* 88:278–289, 1951.

The Bacteriology of Spray-dried Egg, with Particular Reference to Food Poisoning. Medical Research Council (Great Britain). *Special Report Series* No. 260, 1947.

Miller, C. P., and Bohnhoff, M. The Development of Bacterial Resistance to Chemotherapeutic Agents. *Ann. Rev. Microbiol.* 4:201–222, 1950.

Waksman, S. S., and Reilly, H. C. Agar-streak Method for Assaying Antibiotic Substances. *Indust. & Engin. Chem. (Anal. Ed.)* 17:556–558, 1945.

ACKNOWLEDGMENT: The competent technical assistance of Marian Wells Thomas is gratefully acknowledged.

Interstate Milk Shipments

The Second National Conference on Interstate Milk Shipments, attended by representatives from more than 30 states, was held in St. Louis, Mo., June 4–6, 1951. "The Best Possible Milk Supply for All Our People" was given by J. L. Rowland, chairman, as the theme of the meeting. Among the more than 100 in attendance were 29 representatives of industry. Task groups considered certification and supervision, laboratory procedures, and education both of the industry and the public, among others. The 1939 edition of the Public Health Service's Recommended Milk Ordinance and Code was again accepted as the basic standard. A minimum rating of 90 per cent was agreed upon for certification of an area. A brief history of the interstate milk shipment problem and the background of the 1951 conference are an important part of the report.

The conference gave special attention to:

- Preparation of uniform shipping tags and bills of lading
- Recognition of inspection by industry under official supervision
- Formulation of standards for Grade A supplemental milk fats, concentrated and dry milk products, and manufacturing and processing

Complete report of the conference available from J. L. Rowland, Division of Health of Missouri, Jefferson City.

A Culture Medium for Detecting and Confirming *Escherichia coli* in Ten Hours

GEORGE H. CHAPMAN

Director, Clinical Research Laboratory, New York, N. Y.

THE culture medium to be described is based on an observation that *Escherichia coli* does not reduce triphenyltetrazolium chloride (TTC), whereas other coliforms rarely fail to do so. It is made by adding 40 mg. of TTC to one liter of Tergitol-7 agar [1] just before pouring. Inoculation is made on the surface and is spread by means of a glass spreader. If the plates stand several hours before inoculation, 0.1 ml. of the sample can be spread over the surface. For larger inocula, the plates can be stored in the refrigerator. They lose 0.1 ml. of surface moisture per day in closed, not sealed, cans.

On this medium, surface colonies of *Escherichia coli* produce greenish yellow colonies surrounded by a yellow halo. Other coliforms produce dark red colonies. The differentiation is so sharp that colonies can be observed by a loupe or Magnifocuser [2] in about six hours if the medium is warmed prior to inoculation and the plates are placed in single layers in the incubator so that they reach 37° C. rapidly. The final reading can be made in 10 hours.

Escherichia coli is not inhibited at all on the medium, in contrast to other "coli" media. Many other coliforms are inhibited. "Spreaders" are never encountered. The following results were obtained:

Organism (from Feces)	*Number Tested*	*Acid Halo (Yellow)*	*Per cent That Reduce TTC*
Escherichia coli	81	+	0
Aerobacter aerogenes	17	+	100
Paracoli	24	0	88
Proteus, sp.	5	0	100
Pseudomonas aeruginosa	2	0	100

If these findings should be confirmed by more extensive tests, they will simplify and hasten the isolation and confirmation of *Escherichia coli*.

REFERENCES

1. Chapman, G. H. A Superior Culture Medium for the Enumeration and Differentiation of Coliforms. *J. Bact.* 53:504 (Apr.), 1947.
2. Edroy Products Company, New York, N. Y.

Public Health Administration in Mental Hygiene*

PAUL V. LEMKAU, M.D.

Associate Professor, Public Health Administration, Division of Mental Hygiene, Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Md.

THE administration of mental hygiene programs presents, for the most part, the same problems encountered in other programs but, in addition, presents some which are more or less specific to this particular field. This paper will discuss two such issues, the first unique because of the nature of mental hygiene itself, the second arising out of the stage of development of this specialty and its programing.

Public health administration, by definition, is an aspect of public health which has an interest in all areas of health work, from health education to sanitation. It has no categorical program of its own; its techniques and skills are aimed at making programs maximally effective. In contrast, tuberculosis control is a categorical program having relatively small interest in the work of the rest of the department and having little interest in influencing the other functions of the department, except in certain specific and limited ways. These two contrasting types of function have been characterized as horizontal and vertical operations within the health department and will be referred to by those names in this paper.

Mental hygiene is unique in its goals in that it aims to be effective both as a horizontal and a vertical program. One of the difficult issues in the design of programs is to define each of these aims clearly and to plan so that each goal is served in a manner consistent with the other. The Biblical fiat, "No man can serve two masters," presents problems to the mental hygiene administrator as it does to the more general public health administrator.

The vertical or categorical program of mental hygiene fulfils two needs. The first, and by far the easier of the two to supply, is the need for diagnostic and early treatment services for discoverable cases of minor or major psychiatric disease and behavior disorder. While this is primarily a medical care function, it can also be defended as a preventive measure in that it is hypothesized that, first, early diagnosis and treatment prevent the development of more serious and handicapping illness. This is exactly the same sort of reasoning that is used in the development of cancer programs, though the evidence of effectiveness is not as solid in mental hygiene. Second, the diagnosis and treatment of the incipient case make it possible to remove a source of stress in family and community groups. This is analogous to the thinking in tuberculosis control, though again the data are less dependable in mental hygiene than in that field. It should perhaps be pointed out that the administrative situations concerned with these two concepts as they arise in the field are not involved with whether clinical services actually do accomplish these aims in practice; this type of question rarely comes up except, apparently, in the minds of a few critical

* Presented at a meeting of the Society of Hygiene of the Johns Hopkins University, March 6, 1951.

research people. Most field public health personnel, as well as the public generally, seem to have no doubt that clinical efforts not only *can be* but *are* effective when in operation. This is probably based on the realization that frustrating and bothersome people are either relieved and made adaptable enough to be lived with, or else are, through the personnel of the clinic, removed from the community as untreatable in that situation. This relief from difficult and otherwise insoluble problems through the use of specialized personnel is much appreciated, sufficiently so that the more primary problem of ultimate preventive effect rarely comes into question. The third function of clinical services is that the specialist personnel contribute to the horizontal aims of mental hygiene in the health department; this will be discussed more fully below.

While the administrative problems of adding a new group of specialists offering clinical service in psychiatry under health department administration would appear on the surface to be similar to those accompanying the introduction of any other new service function, there are some differences which require comment. The mental hygiene clinic team is different from most other specialized services in two main ways. The first, which makes for fairly frequent problems, is that its treatment procedures are long and its intake is small. The health officer, imbued, as is proper, with the concept that he must serve a large proportion of the population and thinking of clinics in which 20, 30, or even 50 patients are "seen" in a clinic session, becomes concerned over an intake that is rarely as many as two new cases per session. He is concerned that a clinic operating with two or more specialists cannot take care of more than six families a day.

Perhaps he comes to the conclusion that the low intake is a matter of bad management of the clinic and decides to take over the appointment book himself or assign it to one of his nurses. He is disturbed when what he or some agency in the community considers to be an acute emergency cannot get on the books to be seen for a week or two, because the psychiatrist does not agree that the emergency is so acute that it is worth the disturbance of rapport which would result if the carefully cultivated confidence of a patient under treatment were disturbed by an abrupt cancellation. This problem is made more difficult by the fact that records of mental hygiene clinics are more confidential—as well as longer—than most records in public health practice. This results not infrequently in the health officer's feeling left out, even though he is usually asked to sign letters reporting the clinic's findings to referring physicians and agencies. These feelings occasionally lead the health officer to jump in with both feet and try to wrest control of the technical procedures of the clinic from the psychiatric staff. The situation usually then lands in the lap of the state-level administrator, who must arrange a conference in which he acts as a mixture of therapist, peacemaker, educator, and industrial conciliator.

Another problem related to these is that the psychiatric personnel are likely to be so closely identified with their patients and to treat them with such administrative informality that the informality spills over. The staff may fail to follow wise administrative practice in relation to the health officer and the rest of the department. Minor shifts of procedure are made and the department head is not informed. A member of the team is changed, and the health officer does not find it out until he is asked to sign the payroll. For example, a psychologist recently resigned entirely without notice, leaving three clinics "uncovered" for a week. I was told that before calling me he had told everyone

concerned in the several clinics in which he was working that he could no longer be present. Unfortunately, I did not inquire as to whom he did tell. He had told the psychiatrist but not the health officer. This resulted, in two clinics, in failure to cancel appointments, and the health officer resented the fact that his people thus were disappointed and that his department's reputation for dependability had suffered.

Such occurrences lead to the conclusion that no technical procedure is devoid of administrative implications, a conclusion which is unavoidable for almost all public health administrative work. Since mental hygiene personnel are likely to be recruited centrally, and have their initial contacts at the state level, the problems of full local collaboration are likely to be more acute in this field.

The solution of such problems is usually not too difficult, though it may occupy many months for accomplishment, months in which the psychiatric and public health staffs each learn more about the ways the other works and thinks. Progress on large issues usually seems to be made through working together on numerous small ones. Conversely, attempts to educate on large issues rarely accomplish the solution of multiple small ones. The psychiatric and the public health staffs need a tolerance for each other and a consciousness that each does not know all about the other's work. It is a problem of the psychiatrist's adapting to the health officer's interest in satisfying the large group to be served, with the public health officer learning to understand that the psychiatrist cannot easily be pushed from his stand that the individual under treatment is more important than one who is not yet under treatment. Both learn eventually to compromise and to appreciate the problems of the other.

The horizontal aims of public health mental hygiene are very high, so high that they are rarely baldly stated for fear of frightening the practical-minded administrator. They envision every member of the health department influenced in his work by "mental hygiene principles," something I have never heard defined. My personal opinion is that if mental hygiene ever is thrown out of public health, it will be because psychiatrists have been unable to reduce this phrase, "mental hygiene principles," to meaningful concepts that can be taught.

Generally speaking, clarity has been achieved in two areas, at least to some extent. These are in certain aspects of industrial mental hygiene which are adaptable to public health as an industry, and, second, in certain concepts about personality development that can be included in all work with people. The material that makes up these two fields has been discussed so often and in so many places that I will not go over it here, except to state that it comprises such matters as non-judgmental interviewing, anticipatory guidance, mobilizing the patient's knowledge for his own use, data on the physical and psychological maturation of the child, and so on.

One of the great disappointments health officers sustain is finding that many, perhaps most, psychiatrists they employ for clinical work are not interested in furnishing stimulus to the department of health in the areas just mentioned. Psychiatric specialists write and act as though every specialist in the field has the knowledge necessary to carry out this "horizontal" function and also that each has the personality traits necessary to get that knowledge put into practice. In actuality this is far from true. One of the great advantages to psychiatrists of working under public health auspices is that such work gives opportunity to develop thinking and technique in these areas. Most psychiatrists are trained and experienced only

in treating individual patients, and are very hesitant about extending themselves further into the problem of personnel management and the guidance of presumably mentally healthy people.

In planning services, the administrator must see to it that the psychiatrist selected to run a particular clinical service is not expected to be able to take care of the "horizontal" functions except when he is known to be capable of it. The health officer knows that the specialist in orthopedics is not likely to be able to tell him how to get the corner grocer to clean up his icebox, but he frequently has to be warned that the specialist in psychiatry probably will not be able to help, either—at least not until he has had some public health experience. Then he may be able to help through teaching something about handling difficult interviews and about techniques to be used in attitude changing. Sometimes the health officer's job is to discover how to keep the psychiatrist from trying to educate others about things of which he is profoundly ignorant.

On the other hand, some health officers are an embarrassment to the psychiatrist because they wish to respond to invitations to make mental hygiene speeches. The psychiatrist usually knows one thing for sure: that nothing he can say can apply equally to everyone to whom it is addressed. The health officer may be less aware of this and may yield to a temptation to be as positive in saying that every child should clean up his plate as he is in saying that all should be immunized. It is curiously difficult to fail in making speeches about mental hygiene, and the health officer sometimes gets the idea that because his speech is well accepted it is good. This presents a difficult problem to the administrator at state level, since he is anxious to preserve the evangelistic spirit but also to improve the quality of the preaching.

One method of dealing with both these situations in which the two brands of specialists get to running off in all directions is to stress that a new clinic is a research project in administration: most are scientists enough to be frightened into moving carefully when you indicate that they are doing research.

In general, the "horizontal" functions in the local health department are little stressed until clinical services have been established and have contributed to the solution of a few difficult problems. Then it becomes possible to add consultative functions as they are asked for by members of the department. In many areas the horizontal functions rest for a long time on state-level personnel, the psychiatrist and the mental hygiene nurse consultant or other specially trained personnel. Eventually this may not be necessary, but it is very likely to remain so permanently in any system which makes use of part-time personnel.

The fact that mental hygiene clinics operate as "team" organizations also leads to difficulties. The team, as is well known, consists of the psychiatrist, who is generally the designated leader, the psychologist, and the psychiatric social worker. The public health nurse may replace the psychiatric social worker in some instances and in some of her functions; she fills the administrative and investigative functions reasonably satisfactorily but is usually not capable of handling the treatment function, which is rather foreign to her training. The team relationship in which no single member makes decisions independently of the others, though the psychiatrist holds the final authority, is rather unusual in the public health setting, where the physician usually occupies the decisive position alone. The team method of operation implies conferences within the team itself, a procedure which not infrequently gives rise to feelings of being left out on the part of the referring nurse or agency, or even the health

officer. This problem is the more severe because the team members may be bored with a second conference for the benefit of these latter persons and groups, and because the team members may be insecure and anxious, may be hesitant about "laying their cards on the table" with a group which is sometimes jealous and more than a little hostile to this new method of operation.

A particular problem that frequently arises is the relation of the public health nurse to the auxiliary personnel of the psychiatric team, the social worker and the psychologist. There is a good deal of jealousy and suspicion to be found in their relationships. It is founded, I think, on the fact that the nurse is by training willing to share her rapport with a patient only with someone having greater medical training than herself; this status is not granted by her to the psychologist or the social worker. This issue has defeated several medical social work consultants to health departments that I know of; when the relationship between the patient and the auxiliary personnel is as intense as it must be for effective work in the case of the psychiatric social worker or psychologist, and especially when the latter tend to be a bit conceited about their alleged ability to handle such intense human relationships, and when they tend to capitalize on the relation with patients the more because they have failed to be able to establish friendly contacts with fellow members of the health department, the ground for development of jealousy and suspicion is obviously very well cultivated and fertilized.

As is the case at the higher administrative level, this problem is usually best solved through stressing the testing and research character of the relationships at the present time. We now have some interesting experiments in the State of Maryland, each developing somewhat different methods for solving the problems implied here.

There are two psychologists working in nurse education in mental hygiene in the state; both have become trusted consultants to the nursing profession, though they work quite differently. The one works slowly and quietly with small groups, usually about specific cases. The other works with rather larger groups, though never more than 10 to 15, using lecture and discussion techniques, role playing or socio-drama, and making home visits with nurses so that interviewing may be taught. Two psychiatric social workers do the job in other situations. One of them orients her work primarily in the direction of making the clinic maximally effective through regional intake conferences in which cases for clinic care are proposed by the nurses and discussed by the group. It is occasionally possible to help the nurse to a procedure that will make clinic contact unnecessary and, in any event, case finding is improved. A certain amount of general teaching can be done in this situation as well. In a second area, a psychiatric social worker has been resident for several years, gradually gaining the confidence of and acceptability by the nurses through working on a case-by-case method. At the state level, the consultant is a specially trained public health nurse. There is no question that such personnel save a good deal of time in gaining initial acceptance in the department and perhaps more easily gain the confidence of the health officer than a person from a less well understood profession. In trying to express this idea recently a friend of mine said, "The health officer is more familiar with the nurses."

The horizontal function of mental hygiene in health programs does not stop at the limit of the health department, but extends into the community. The tremendous research problems of general public education in mental health cannot be discussed here, but a reference must be made to the conference procedure

used in many clinics as an effort toward the education of special professional groups. This consists of a discussion group arranged to include everyone in the community with a professional interest in the case under question. These conferences include teachers, principals, social workers of public and voluntary agencies, court probation officers, occasionally ministers, and, increasingly, I think—and hope—local physicians who refer cases.

Aside from the problems arising out of the confusion and complexities of the horizontal and vertical goals of mental hygiene in public health, there are certain problems arising out of the developmental stages of public health and of psychiatry. Public health has been concerned with the prevention and treatment of illness of multiple and complex etiology only for a short period of time; it is not unusual that psychiatrists, who have been struggling with this type of illness for centuries, should tend to regard the public health man as a parvenu in such work. They have even been known to say that public health only became interested in psychiatric illnesses when the federal government made money available—then public health climbed on the bandwagon. On the other hand, psychiatrists only recently became interested in preventive and public education efforts in their field. Public-health-trained physicians perhaps regard the psychiatrist as a rank amateur in this area, which has been their forte for many years.

This issue is at the moment the source of some national controversy, particularly since the Council of State Governments published its study of the mental health programs of the states. The advisory group on this report recommended that state programs in mental hygiene should be the responsibility of the state psychiatric hospitals in all cases, despite the fact that this is now the case in only 12 of the 53 states and territories. It hardly needs to be said that the advisory committee contained no public-health-trained people and that it was dominated by psychiatrists whose primary experience had been in hospitals. How this argument will turn out remains to be seen. I hope that the controversy will result in a decision that there are no data on which to base a final conclusion at this time and that the research character of the problem will be recognized, so that diverse types of administrative organization may be tried.

SUMMARY

Mental hygiene in public health presents two special sets of problems of administration:

1. The first is that the aims of mental hygiene in public health include both categorical, or vertical, and horizontal functions in the health department's work, and that these two goals tend not to be clearly separated in planning.

2. The second set of problems arises from the developmental stage of psychiatric and public health theory and practice.

Biostatistics in the Evaluation of Premature Services

FRANCISCO J. MENCHACA, M.D.

Assistant Professor of Hygiene and Preventive Medicine, School of Public Health, Santa Fe, Argentina

EVERY public health worker agrees that prematurity is one of the leading causes of infant mortality. Prematurity attracts medical interest from several points of view: A high percentage of cases are of unknown etiology; prenatal care lowers the incidence of premature birth but not in direct proportion; the fatality rate from this congenital condition is falling very slowly.

Much has been said and written about prematurity: its causes, prophylaxis, treatment, the planning of special services, and the equipment of hospital units for premature infants.

We believe that this broad and complex problem must be faced realistically, employing the strict criteria of good public health administration.

What is the principal weapon for combating mortality from premature birth? We believe that the answer is the hospital unit for care of premature infants. It would be extremely useful to know accurately the effectiveness of the services provided by such units.

Biostatistics, of course, can help in the evaluation. But let us consider to what extent figures can give satisfactory evidence as to how the premature unit is operated. Wallace [1] has reported the wide variations she found in statistical data on premature infants in New York City. The crude rate for mortality of premature infants is not a good expression for purposes of evaluation. As a rule the number of cases is not very large and, moreover, under 2,500 gm. there are birth weight groups that vary widely in their mortality rates. It follows that to express the rates for mortality of premature infants in useful statistical terms it is necessary to present the rates for several groups according to weight at birth.

The majority of authors accept the following four groups, based on weight at birth expressed in grams:

Less than 1,000 gm.
1,000 to 1,499 gm.
1,500 to 1,999 gm.
2,000 to 2,500 gm.

Other factors must be taken into consideration in evaluating services for prematures: A classification of the services according to equipment, staff, and routines is necessary for interpretation of the mortality rates, because these factors have a direct bearing on the mortality rates. Organizations such as WHO, the American Public Health Association, or the American Academy of Pediatrics, should be able to review this subject and establish the qualifications required for different categories of services for prematures.

In order to initiate the discussion, we propose the following classifications:

Class A services: This group includes the best services—nurseries with special arrangement and equipment, medical and nursing specialists attached exclusively to the premature unit.

Class B services: The services in this class provide special rooms for prematures and

Mortality Rates of Premature Infants According to Birth Weight Groups and Classes of Services

Community, Health District,
or State .....
Period of Time.....
(Month or Year)

Birth Weights	*... Services * Class A*	*... Services * Class B*	*... Services * Class C*	*... Services * Class D*	*Averages*
Less than 1,000 gm.					
1,000 to 1,499 gm.					
1,500 to 1,999 gm.					
2,000 to 2,500 gm.					
Averages					

* Number of services.

appropriate incubators, but the physicians and nurses are not attached exclusively to this service.

Class C services: In this class care is given in a separate nursery with simple incubators that provide heat but not oxygen or humidity control (such incubators are very common in Latin America).

Class D services: This class includes the most elementary services without special physicians or nurses and without incubators, offering only a room for premature infants separate from the general nursery or ward.

We shall be very happy if the above classification receives consideration by those interested in this problem.

As a basis for a practical evaluation of the work of the premature services of a community, health district, or state, the following table form is proposed for presentation of the data on infant mortality according to the classifications that have been suggested.

Recording the data in conformity with such a table makes it possible to establish some useful standards which would orient the biostatistician and would facilitate evaluation of the efficiency of services for premature infants.

With these standards established, it should be easier in pediatrics meetings or congresses to discuss the results obtained from the various procedures applied in premature care. From tables such as the one proposed we can observe whether the incidence of the smaller or larger prematures is rising or falling, and relate the trends with measures directed toward the prevention of premature birth.

SUMMARY

If the fight against mortality from premature birth is focused on the premature unit, it is necessary to evaluate the medical efficiency of such units. Biostatistics can help by presenting the data according to birth-weight groups and classes of services. The author presents for discussion a table form in which the data can be presented according to four birth-weight groups and four classes of services.

REFERENCE

1. Wallace, H. M., Losty, M. H., and Wishik, S. M. Prematurity as a Public Health Problem. *A.J.P.H.* 40, 1:41–47 (Jan.), 1950.

A Community Welfare Agency and a University Coöperating in a Speech and Hearing Program

GEORGE J. FORTUNE

Director, Cleveland Hearing and Speech Center, Cleveland, Ohio

THE Cleveland Hearing and Speech Center, a Community Fund agency affiliated with Western Reserve University, represents a rather unusual clinic from the standpoint of organization. Through careful planning on the part of Health Council members of the Cleveland Welfare Federation, Western Reserve University, and interested professional and lay groups, two organizations which grew up independently were merged in 1945 to form the Cleveland Hearing and Speech Center. One of these organizations, formerly known as the Cleveland Hearing Center, and a chapter of the American Hearing Society had been serving a small segment of the hearing handicapped through private funds and limited Community Fund support since 1924. It provided lip reading, audiometric testing, and recreational activities, and aided in the promotion of a hearing conservation and prevention program in the Cleveland public schools and public health agencies. The other organization, the Western Reserve University Speech Clinic, operated on the campus as a student training center and of necessity served a selected case load.

These two agencies met with considerable pressure for services, particularly during the war years, and it was realized that a coördinated program would be of great mutual benefit. Their efforts constantly crossed lines in the hearing and speech screening of Air Corps cadets assigned to the university; in corrective work with youths turned down for specialized military service because of mild correctible speech or hearing defects; and in requests from a large preschool and adult population not served by any public school or community program.

A contract was drawn between the university and the Community Chest agency to maintain a well rounded program. Thus, the university's requirements for training and research and the Welfare Federation's requirements for widespread community speech and hearing service were both assured. The contract entailed the permanent addition of a university representative on the center's board of trustees, joint approval of staff, certain responsibilities to university students, and specific community service requirements, and provided for administration by qualified persons with over-all training. The university established hearing and speech curricula in its graduate and undergraduate schools, established university status for all center staff members, and provided for specialized degrees in these areas through the doctorate.

In accordance with the contract, the Cleveland Hearing and Speech Center board of trustees immediately employed a professional staff, so that all personnel were qualified for university teaching and research. On the other hand, several

members of the University Speech Clinic staff were released from full-time teaching and were permitted to spend half time in community service. The new agency incorporated under the laws of Ohio as a nonprofit organization under the name of the Cleveland Hearing and Speech Center.

The Community Fund gave increased financial support. The university provided a building and minimal financial help, and several foundations and philanthropists contributed, so that this new organization dedicated to service, teaching, public education, and research was realized in June, 1945.

The Community is better served by affiliation with a large university, since:

1. Excellent personnel can better be secured and retained by the agency.

2. Professors from related fields of psychology, psychiatry, medical specialties, and applied social sciences are available to contribute advisory services, which insures a well rounded and ethical program.

3. Well trained personnel on graduate stipends under expert supervision are available at a teaching center and provide quality service to more people at lower cost to the community. There are 12 or more graduate assistants on the center staff, who carry approximately 30 cases during each 20 hour week. Most clients have a half-hour of therapy once a week.

4. Many persons who normally avoid welfare agencies because of the mistaken concept that they are charity organizations do not hesitate to apply at an agency located on the campus and affiliated with the university.

5. Enlarged vision of the total problem is engendered in a staff performing the dual role of professor and clinician.

6. Research activities of a university-affiliated staff are directly beneficial to community services.

7. Coöperative programs can be set up with university hospitals and professional schools, and teamwork "clinics" for cleft palate, aphasic, and hearing cases can be operated effectively.

The University benefits by affiliation with a community welfare agency, since:

1. It provides more complete and practical training facilities than ordinarily would be available to its students. Students who carry 30 diversified types of cases a week for the latter part of their advanced training period know *how* to do therapy when they graduate.

2. All students in the university can receive much more effective clinical screening and therapy than universities usually offer. Over 1,000 entering students are screened annually for hearing and speech difficulties, and those requiring help are immediately enrolled at the center or referred to coöperating agencies.

3. Complete coördination of speech-hearing activities among student health services, student deans, vocational advisers, and the center serves the university student more effectively.

4. The practical training program aids the university to attract and train students and teachers interested in clinical work and teaching. Local and national interest has attracted students from all over the United States. Many foreign students also have been sent to the center to study this type of program.

5. There is little danger of "Ivory Tower" teaching in a busy center which serves approximately 800 different children and adults each month on either an evaluative or therapeutic basis; and over 300 persons several times each month for some type of group therapy, advisory service, or recreational rehabilitation activity.

6. The center's over-all program offers an invaluable opportunity on campus for social service group workers who desire field work with handicapped groups, and for psychologists who wish to secure special clinical training with the handicapped. It further provides medical students and nurses with an insight into the rehabilitation aspects of the variety of cases attending such a center, i.e., cleft palate, cerebral palsy, laryngectomized clients, deaf and hard of hearing, aphasics, stutterers; and through the carefully correlated parent education programs, etc.

7. The Cleveland Hearing and Speech Center is affiliated with 101 other Community Fund agencies, and this liaison allows for student internships and field work not otherwise available. At present, internships and field work opportunities are available to graduate students attending the center in agencies serving delinquents (Blossom Hill and Hudson Farm); orphanages (Parmadale and Bellefaire); a residential school for the orthopedically handicapped (Rosemary Home); Rainbow Hospital, for convalescent orthopedically handicapped children; a child guidance center; a rehabilitation center for severely crippled and disabled children and adults; a state hospital for the mentally ill; two Veterans Administration hospitals; and classes for retarded children with a below-50 I.Q. Some of these opportunities offer remuneration to the doctoral or master's degree candidate; others offer only credit for clinical experience. Public schools

provide practice teaching facilities and opportunities for speech-hearing screening survey experience.

8. Research activities of the university are improved by the large numbers of case records available for study.

9. The university would not have received grants to accomplish many of the research activities for which the Cleveland Hearing and Speech Center, as a Community Fund agency, is eligible, since it provides widespread community service.

Research activities at the center include:

1. A Cleveland Foundation-financed study of the hearing and speech problems of the cerebral-palsied child. Center cases, as well as cerebral-palsied children in the Cleveland public schools and the Cleveland Rehabilitation Center, were made available for this study.

2. A Cleveland Foundation-financed study of the deaf child below the age of three is being accomplished in an experimental demonstration nursery project. The children between 16 months and three years of age who attend the nursery half a day, five days a week, provide data for this research. A parent program combining observation, reading, and seminar discussions is run concurrently. Other aspects of this study include:

a. More accurate testing of residual hearing in very young deaf children

b. Improvement of language techniques with the very young deaf child

c. Adjustment of the very young child to a wearable hearing aid

d. Effects of a socialization program on the development of language

e. Evaluation of a follow-up program for the deaf child of three years in a normal public day school in East Cleveland and Cleveland, where most of these children enroll at the age of three

f. Evaluation of parent participation in training a deaf child

g. Follow-up study for 10 years or more of all children attending this experimental class.

3. Studies in esophageal speech in conjunction with the Western Reserve University Medical School Research and Surgical staff. As a result of this research, the center has produced a training film, "New Voices," financed by the Republic Steel Corporation of Cleveland. The film has been approved by members of the American Academy of Ophthalmology and Otolaryngology, the American Cancer Society, and the American College of Surgeons, and is available for purchase or rental. A training manual accompanies this film, so that it can be used where speech clinic facilities are not available.

4. A joint study of articulation defects purported to be allied with certain dental malocclusions is in progress in the center and Western Reserve University Dental School. These studies will be reported in the professional literature.

5. A publication on articulation has been financed by the university and written by center staff members. This text will augment speech improvement classes in public schools as well as aid to parents. It is entitled *Your Child's Speech and How To Improve It.*

6. A series of pamphlets concerning the preschool child has been financed by the Junior Chamber of Commerce of Cleveland. These pamphlets outline procedures developed at the center for problems of cleft palate, hard of hearing, cerebral palsy, deaf, speech-inhibited and stuttering children. All pamphlets have been written with related professional specialists collaborating. Four are now available for distribution. They are entitled *A Child Doesn't Hear, A Child Doesn't Talk, A Child Has Cleft Palate, and A Child Stutters.*

Acceptance of this coöperative center in the community is evidenced by the fact that the major portion of our case load is referred by medical specialists, general practitioners, and public schools. Working closely with specialists insures coördination of medical and rehabilitation services, which is essentially more beneficial to the speech- or hearing-handicapped child or adult.

The center carries official contracts (medical and rehabilitation) for service with the Veterans Administration, the Commission for the Blind, the Bureau of Vocational Rehabilitation, the State Crippled Children's Services, and several private health agencies.

Coöperative service programs with the National Society for Crippled Children and Adults, the National Foundation for Infantile Paralysis, and others are also maintained on a referral basis. A close relationship with the public and parochial schools has been firmly established, and the center provides supplementary and diagnostic services not available in the public and parochial schools. As a department of the uni-

versity graduate school, it participates in inservice training of public school teachers of speech correction, and teachers for the deaf and hard of hearing. In coöperation with the Board of Education Adult Education Program, the center maintains three extension classes combining lip reading, speech improvement, and auditory training for adults in outlying districts. These soon may be augmented to include a program for adult deaf who need help.

The public school otological clinic and otologists of Northern Ohio refer children to the center for audiometric testing, rechecks, fitting and evaluation of hearing aids, educational advice, and also refer parents needing parent education. This entails continuous observation of each child over a period of weeks, in contrast to the brief diagnostic otological interview formerly available. Children evaluated in this natural and easy atmosphere are assured a more accurate testing in reference to teachability, response to gross sounds, and adjustment to hearing aids. They are eventually referred to either the public schools or the center for special education needs.

Our Hearing Aid Advisory Bureau, operated on the pattern of the military and Veterans Administration aural rehabilitation programs, was initiated upon the request of the otologists of the local Academy of Medicine. Joint planning by a Medical, Scientific and Research Committee at the center, the medical school, and hearing aid dealers insured the success of this program from the outset. The ethical and professional standards of the Hearing Aid Advisory Bureau are established by the highly qualified Medical, Scientific and Research Committee, which recommends policies and practices and aids the staff in continuous evaluation of services, equipment, and personnel. Between 50 and 75 clients per month, including Veterans Administration hearing cases, are handled by this single department. Free hearing aids are available to indigents through a private fund and one hearing aid manufacturer.

Public education is a vital part of the center's total program. Institutes are provided for senior medical students in the university hospitals' ENT department, public health, school, and industrial nurses, and for nurses training in other Cleveland hospitals. Lectures are scheduled regularly for P.T.A. groups, superintendents, principals, and school speech and hearing therapists.

The center has participated in several two year experimental demonstration programs in coöperation with suburban school districts, each comprised of about 8,000 students. Two senior staff members served as consultants.

Advanced graduate students at the center functioned as part-time paid assistants to the speech and hearing therapist employed by the Board of Education. Other graduate students participated as practice teachers and were closely guided in their training activities by center staff members.

Speech-hearing surveys are provided to suburban and outlying community school systems by a team of senior staff members and well trained graduate assistants, on a demonstration and advisory basis.

As a result of these surveys, speech and hearing therapists have been added to the staffs of 12 public school systems. Additional school systems will initiate programs in the near future with subsidization from State Department of Education funds.

The Cleveland Hearing and Speech Center, established in 1945 as a coördinated Welfare-University program, has quadrupled its case load, which includes clients from all over the country. Policies are established by a board of specially selected medical, professional, and lay persons. The staff is comprised of:

1. Special education and rehabilitation experts
2. Speech and hearing specialists
3. Hearing aid consultants or audiologists
4. A remedial reading expert
5. An esophageal speech specialist
6. One clinical psychologist
7. A group worker
8. Two specialists in teaching the deaf
9. Lecturers in anatomy, otolaryngology, psychiatry, psychology, etc.
10. Eight to ten advanced graduate assistants, all trained as speech and hearing therapists prior to enrollment.

Status provided by Western Reserve University, ranging from full professor to instructor, assures the staff of academic standing.

The combining of university and community health facilities has worked markedly well in the Cleveland community. It is our conviction that a program offering therapy, recreational rehabilitation, teacher training, public education, and research is more efficient and less costly to the community or university.

We strongly urge other communities and universities to consider such a cooperative program in future planning, to better serve the community, public, and private agencies, and to expedite progress in the field of rehabilitation.

The Officer Selection and Evaluation Program of the U.S. Public Health Service

SIDNEY H. NEWMAN, PH.D.

Chief, Officer Selection and Evaluation Program, Division of Commissioned Officers, U. S. Public Health Service, Washington, D. C.*

THE work of the U. S. Public Health Service affects on a national scale the lives and health of the American people. The Service also engages in important international health activities. Speaking to the House Subcommittee on Appropriations for 1952, Surgeon General Leonard Scheele stated, "In operating the various programs I have mentioned, the Public Health Service seeks to provide the nation with the services of highly trained and skilled personnel. Our goal is to employ and develop the best qualified men and women in their respective fields, and to give them opportunities to grow in ability."

By developing methods for selecting and evaluating commissioned officers, an important component of the Service's professional personnel, the staff of the Officer Selection and Evaluation Program is working toward achieving the objectives stated by the Surgeon General. The staff also aims at methods which are accurate and objective, so that personnel actions affecting all candidates and officers will be equitable. The program, initiated in the fall of 1947, is a pioneer venture in the selection and evaluation of medical, scientific, and other health personnel. It is hoped that the program will increase knowledge concerning problems in this field, and contribute to their solution.

ATTITUDES TOWARD PSYCHOLOGICAL WORK ON PERSONNEL PROBLEMS

In order to achieve maximum usefulness in the solution of personnel problems, psychological work needs to be done in an atmosphere of friendliness, patience, and understanding. Many people expect quick solutions, not realizing that personnel problems, viewed scientifically, require a continuous long-term research approach.

From the broader point of view, personnel selection and evaluation are dependent on the solution of complex psychological problems of measuring human abilities and personality characteristics. Predictions of behavior in various occupational situations need to be made on the basis of such measurements. Selection and evaluation cannot proceed any more rapidly than psychological theory and measurement progress. However, theory and measurement are frequently advanced by studies in the field of personnel selection and evaluation when such investigations are properly conceived and executed.

Some people expect psychological methods to be practically infallible. However, present psychological methods of dealing with personnel problems are certainly not perfect. By the judicious use of the best methods now available,

* Professional staff includes Frank J. Harris, Ph.D., Ruth C. Bussey, Ph.D. (part-time), Margaret A. Howell, M.A., and Milton Epstein, B.A. Jane S. Harris, M.S., served for about one year.

and by conducting research on the development of new methods, genuine contributions can be made to the solution of such problems. Furthermore, when the accuracy and validity of each method is subjected to empirical study, the methods can be continuously evaluated and improved. Certainly such an approach is superior to, and much more impartial than, selections or evaluations based on the judgments of one or two individuals.

Sometimes when applicants in whom some individual has interest or confidence fail to be selected, this individual is prone to blame the selection methods. It should be realized that judgments based on unsystematic or superficial on-the-job observations, interviews, or letters of recommendation are notoriously erroneous and unreliable.

Psychological work on personnel problems, then, should be viewed in much the same impartial, objective manner as any other kind of scientific endeavor.

METHODS IN OPERATION

Methods used for selecting Regular Corps commissioned officers below the Full Grade (Navy Lieutenant Commander) are presented in Figure 1.*

Steps 1 and 2. The potential candidate learns about the Public Health Service, requests application blanks, and submits an application.

Step 3. The candidate is asked to take written, oral, and physical examinations at the examining center nearest him.

Step 4. The candidate takes from four to six objective written professional examinations,† an aptitude test, and a Biographical-Personal Inventory. Each of the professional examinations requires a maximum of three hours. Dental candidates also receive a ten hour practical work examination.

Step 5. An Interview Board consisting of three or four officers, some or all of whom are in the same professional category as the candidate, evaluates the candidate's personality, emotional characteristics, intellectual attributes, character, and qualities of leadership.

Step 6. Physical examinations are administered to all candidates.

Step 7. A File Evaluation Board, composed of three or four officers in the same professional category as the candidate, assesses professional background and experience, educational qualifications, and work record.

Step 8. Physical examinations are evaluated by a Medical Review Board so that uniform physical standards may be maintained.

Step 9. A final Central Examining Board assesses the integrated results of written and oral examinations and file evaluations, checking each candidate thoroughly. The board sets up the Merit Roll, a listing of candidates in order of merit based on the final averages obtained by combining the three components, writtens, orals, and file evaluations. Those candidates above a designated average score are declared eligible for appointment.

Step 10. Candidates are informed of examination results.

Step. 11. As vacancies occur, successful candidates are awarded commissions in the order of their standing on the Merit Roll. Ordinarily, the officer's assignment is discussed with him before it is made.

---

* Applicants for Full Grade and above, Regular Corps, are not necessarily required to take writtens or orals, but may be requested to do so. Reserve Corps applicants in designated professions are required to take a three hour professional examination and to be interviewed.

† Deming, Long and Lazo,[1] and Atwater and Long[2] have discussed the pioneer work of the Professional Examination Service (formerly the Merit System Service), American Public Health Association, in the development of objective professional examinations for the selection of public health personnel. Watson[3] has described the use of objective written professional examinations by the American Board of Internal Medicine, Inc. The American Board of Preventive Medicine and Public Health, Inc., is using objective examinations developed by the Professional Examination Service and an interview patterned after Public Health Service methods.

FIGURE 1

1. Learns about P.H.S. 2. Submits application. 3. Notified about examining center. 4. Written examinations. 5. Interview Board. 6. Physical. 7. File Evaluation Board. 8. Medical Review Board. 9. Central Examining Board. 10. Notification of results. 11. Award.

RESEARCH AND DEVELOPMENT

The necessities for maintaining a selection and evaluation program in operation require that objective professional examinations and other methods be developed for immediate use. Strict precautions are maintained to insure that the methods are the most adequate that can be made available. These safeguards are taken, first, in the design and construction of tests, examinations, or other methods, in connection with content, structure, and procedure. Continuous statistical checking on the accuracy or reliability of the methods and the discriminating power of each question provides a second type of safeguard. As a third precaution, those involved in the methods, such as candidates and board members, are consulted regularly.

Such care and caution will tend to produce good methods of measurement. However, the question of how well these methods actually perform the tasks for which they are designed, selection and evaluation, is not answered in such a manner. To answer this, it is necessary to carry out research on such matters as the relationships between the various scores made when competing for entrance to the Service and measures of progress or success in the Service.

The developmental work and research now being done on the various methods of selection and evaluation will next be discussed.

Professional Examinations. In developing objective written professional examinations, the goal is to require the candidate to demonstrate ability to understand or interpret, to utilize or to apply, facts, data, or principles. Problems or questions may be presented in any form, such as verbal, quantitative, graphic, pictorial, and diagrammatic. Questions the answers to which depend merely on rote knowledge or memory of specific facts are used only where absolutely necessary.

The contents of the examinations are based on the requirements of the Service, professional and other relevant educational background, and professional experience. Public Health Service officers, highly proficient in the field designated for examination, prepare the subject matter outlines. Personnel of the Professional Examination Service, American Public Health Association, collaborate on or review the outlines. Experts in the fields, either in or out of the Public Health Service, are asked to construct test items on specified topics. The submitted items are checked for construction, format, English, and content by Public Health Service and Professional Examination Service personnel. They are then reviewed by three or four experts, who analyze each item in accordance with standard procedures and forms developed by the Professional Examination Service.

Professional Examination Service consultants and Public Health Service officers revise the items in the light of reviewers' reactions. Each examination is finally prepared by selecting from the pool of processed items those deemed best and most appropriate. After administration to candidates, all test items are analyzed to determine such factors as difficulty and ambiguity. Further revisions based on such analyses may be made.

The collaboration between the Professional Examination Service and the Public Health Service is so planned and arranged that there is no overlapping of work. Each person contributes the work for which his experience, background, and role in either organization has best prepared him. In the initial phases of the development of professional examinations, the Professional Examination Service saved the Public Health Service several years' time. This was done by making available needed items contained in the extensive files of the Professional Examination Service

and by furnishing aid in the production of tests.

It is necessary to develop a series of from four to six examinations for each of about 30 different professions. The number of people involved in the preparation of examinations gives some idea of the magnitude of the task. About 300 experts from outside the Public Health Service and about 250 Public Health Service officers have prepared examination items. These individuals have constructed 15 to 200 items each, most of them submitting about 30 items each. Approximately 1,000 experts outside the Service and about 300 Service officers have reviewed examination questions. About 50 Service officers have contributed to the preparation of examinations by preparing outlines, revising items, and selecting items for inclusion in examinations. The writer wishes that the names of all contributors could be listed here. Without the aid of these people, the professional examinations could not be produced. These specialists are making a genuine contribution to the health of the nation by their work on the examinations.

Research on the professional examinations is designed to answer such questions as, "What is the relationship between examination scores, other selection measures, and performance in the Service?" and, "How may the professional examinations and other selection measures be best combined to produce the most effective means of selection?"

Interview Boards. Systematic planned methods are used to make the interview as uniform, objective, and judicial as possible. The staff of the Officer Selection and Evaluation Program has prepared a *Manual for Members of Public Health Service Interview Boards* and a special form of Interview Report, which enable interviewers to make a quantitative assessment of each candidate. These are based on over two years' experience with a briefer set of interviewing instructions accompanying a report form. In addition, discussions were held with many board members, and a number of interviewers critically reviewed a tryout version of the *Manual*. To increase standardization, practically all boards have had as members representatives of the Division of Commissioned Officers who were experienced interviewers.

In addition to research on the efficiency of the Interview Board as a selection procedure, other studies of interviewing are in progress. Among the problems receiving attention are interview reliability, or the degree of agreement between interviewers; comparison of results of various Interview Boards; the characteristics of each interviewer; and the relation between various rating items in the Interview Report and total score.

File Evaluation Boards. On the basis of experience with board work, a *Manual for Members of Public Health Service File Evaluation Boards,* a special form of File Evaluation Report, a Work-Sheet, and a Confidential Statement form for references have been developed. These tools aid board members to make objective quantitative assessments of the candidate's background, training, and experience.

Research similar to that being done on Interview Board data is being performed on File Evaluation Board results.

Biographical-Personal Inventory. This inventory attempts to obtain, by use of objective methods, information on the following: personal data, occupational background and interests, family and home background, educational background, extracurricular activities, recreational activities, and other personality characteristics. Various techniques are utilized, including some that have been found useful by the Personnel Research Section of the Army,[4] the Bureau of Naval Personnel,[5] and the Coast Guard Academy's psychological program.[6]

Research on this inventory is designed to answer such questions as the following: What are the differences between "successful" and "unsuccessful" Public Health Service officers engaged in clinical, public health, research, and administrative activities? What are the characteristics of officers engaged in and preferring each of these activities? Do the various professions show differences in responses to inventory questions? Can the inventory be used effectively as part of the basis for selection and assignment of officers?

Aptitude Tests. Tests of verbal, quantitative, and spatial aptitudes are administered to candidates in all professions. Research on questions similar to those raised concerning the Biographical-Personal Inventory is being conducted on the aptitude tests.

DEVELOPMENT OF MEASURES OF "SUCCESS" IN THE SERVICE

Performance measures, or Efficiency Reports, as they are commonly called, should (a) yield objective, valid, impartial, and reliable comparative officer evaluations; (b) spread ratings over an entire scale rather than bunch them; (c) furnish a basis for discussing an officer's rating with him; and (d) be practicable in the sense that Rating Officers can learn readily how to fill out the report and can complete it in a reasonable length of time (say in 30 to 40 minutes).

An experimental Efficiency Report consisting of (a) "four-choice" items, (b) rating scales, and (c) a "check-list appraisal" is being studied. After reviewing existing methods of efficiency reporting, the program's staff concluded that the most promising and original method was that developed by the Personnel Research Section, Adjutant General's Office, Department of the Army.[4] The Army terms this the "forced-choice" method, but the program staff prefers to call it the "four-choice" method. The greatest value of the method is the opportunity it gives the Rating Officer to be objective. This officer describes the ratee, and his marking is then scored on the basis of empirically derived keys. Sisson [7] discusses the method clearly. It consists in presenting the Rating Officer with several sets of four adjectives or phrases, such as: A. Businesslike, B. Cooperative, C. Inclined to be lazy, and D. Not physically fit. The Rating Officer is asked to choose from each set of four the adjective or phrase which *best* describes the ratee and the adjective or phrase which *least* describes the ratee. Sisson gives the logical and statistical bases for constructing each set of four choices. It is sufficient to state here that the four-choice sets are not contrived in any arbitrary manner. They are selected on a statistical basis from officers' descriptions of good and poor officers. They are then combined into sets in a manner dependent upon a substantial amount of data.

The staff of the program has adapted a conventional 10 point rating scale technique, also utilized by the Army, for Public Health Service use. Ten such scales, involving descriptions of job functions and of personal qualifications, are being studied.

In addition to these techniques, a "check-list appraisal" has been developed by the program staff and is a part of the experimental Efficiency Report. The Rating Officer is asked to indicate which of a series of statements, such as, "This officer is highly industrious," does or does not apply to the officer rated.

For determining the effectiveness of the Efficiency Report or any part of it, it is necessary to have an independent measure of "success" or performance in the Service. The measure used is a modification, based on experimental data, of a technique used by the Army and others. It involves having Public Health Service officers at many installa-

tions rate each other on a 20 point scale. Ratings are based on four characteristics: work proficiency, administrative ability, personality, and over-all value to the Service. These characteristics are carefully defined. On the basis of these completely confidential ratings, which are not to be used in any type of personnel action, officers are placed in "successful" (high) and "unsuccessful" (low) groups. Items in the Efficiency Report which discriminate between these high and low groups can then be studied and a scoring system developed.

To determine the usefulness of the Efficiency Report techniques under consideration, a preliminary study, involving some 300 officers at five Marine Hospitals, was performed. The results showed that many of the items of the experimental Efficiency Report, as marked by supervisory officers, differentiated between officers placed in "high" and "low" groups by each other. These findings, added to those of the Army, led to the decision that a large-scale investigation of the experimental Efficiency Report would be worthwhile.

Such a study has been performed. A representative of the Officer Selection and Evaluation Program collected data on officers' ratings of each other at practically all Service installations having seven or more officers. Supervisory officers have completed experimental Efficiency Reports on the officers at their stations. The data collected are now being processed and analyzed.

A "Commissioned Officer's Progress and Efficiency Report" has been in use in the Public Health Service for some time. This report involves 11 conventional five point rating scales and a considerable amount of narrative reporting by supervisory officers. Methods for the quantitative analysis of the narrative reports have been devised. These narrative reports and the rating scales are being subjected to intensive analysis. The various parts of the present and experimental Efficiency Reports will be compared. Those portions of each report that are most adequate will be retained in the new Efficiency Report.

It is anticipated that the new Efficiency Report will contain portions such as four-choice items that may meet such requirements as objectivity and impartiality. In addition, the rating scales, "check-list appraisals," and narrative reports can be used by supervisory officers for purposes of discussion with and counseling of the officers being rated. It is probable that after Rating Officers learn how to complete the reports, they will need about 30 minutes per report. Thus, it is hoped that the new report will meet the qualifications previously mentioned as characterizing an adequate Efficiency Report. After the new Efficiency Report has been developed, it will (a) furnish criteria for determining the effectiveness of selection procedures and (b) yield officer evaluations which may be used in such personnel actions as promotion, assignment, and retirement.

POSSIBLE USEFULNESS TO STATES

The Public Health Service has been consistently interested in maintaining and raising standards for personnel engaged in health work.[8] The Professional Examination Service has given most states tremendous assistance in meeting Public Health Service requirements by providing written objective examinations for use by states in the selection of various kinds of health personnel.[1, 2]

The staff of the Officer Selection and Evaluation Program hopes that by collaborating with the Professional Examination Service in examination development it is aiding state personnel programs. Further, it is anticipated that if a new Efficiency Report is successfully developed, such a device might be made available for the use of state personnel systems. Any state could use it as the Service would, or could investi-

gate the validity and applicability of the method in its own situation.

It is the opinion of the writer that every state would profit by having at least one well trained psychologist who would deal with such health personnel problems as selection, on-the-job evaluation, assignment, retirement, training, and so forth, from the scientific, psychological point of view. Such a person might also perform other functions, depending on his qualifications and the needs of the state. He would be useful in maintaining liaison with the Professional Examination Service, in studying the needs of the state for scientific, psychological personnel methods, and in performing studies to determine the validity and efficacy of such methods.

SUMMARY

This paper has discussed the development of the Officer Selection and Evaluation Program of the Public Health Service. The following problems have received attention:

1. The need for viewing psychological work on personnel problems as a scientific endeavor
2. The objective examinations, tests, Interview Boards, and File Evaluation Boards now being used to select officers
3. The construction and validation of psychological methods of selection and evaluation
4. The intensive study of Efficiency Reports, or measures of on-the-job performance
5. The close collaboration between the Officer Selection and Evaluation Program and the Professional Examination Service of the American Public Health Association

REFERENCES

1. Deming, Dorothy, Long, Lillian D., and Lazo, Elizabeth K. Progress in Merit System Unit Examinations. *Pub. Health Nursing* 39:73–79 (Feb.), 1947.
2. Atwater, Reginald M., and Long, Lillian D. New Methods for the Selection of Public Health Personnel. *Canad. J. Pub. Health* 36:1–5 (Jan.), 1945.
3. Watson, Cecil J. Some Activities and Impacts of the American Board of Internal Medicine. *J.A.M.A.* 138, 4:257–260 (Sept. 25), 1948.
4. Sisson, E. Donald. The Personnel Research Program of the Adjutant General's Office of the United States Army. In Psychological Research in the Armed Forces, J. F. Flanagan, Chairman. *Rev. Educ. Res.* 18, 6:575–614, 1948.
5. Stuit, Dewey B. (Ed.). *Personnel Research and Test Development in the Bureau of Naval Personnel.* Princeton, N. J.: Princeton University Press, 1947.
6. Newman, Sidney H., and Bobbitt, Joseph M. The Development of Entrance Tests for the United States Coast Guard Academy. *J. Appl. Psychol.* 32, 3:248–254, 1948.
7. Sisson, E. Donald. Forced Choice—The New Army Rating. *Personnel Psychol.* 1, 3:365–381, 1948.
8. Public Health Service Regulations, section 51.12, Fiscal Year, 1951. (15 *Federal Register* 4222.)

Walter Reed Army Medical Center

On September 13, the centenary of Major Walter Reed's birth, the Army Medical Center located in Washington, D. C., was renamed the Walter Reed Army Medical Center in honor of Dr. Reed's successful struggle to determine the mode of transmission of yellow fever. In addition, the Army Medical Museum presented a special exhibit depicting Dr. Reed's work.

Other observances of the day were held in many other parts of the country, particularly in Virginia, where Dr. Reed was born.

New York University College of Medicine, from which Dr. Reed received his second medical degree in 1870, publicly displayed relics of his experiments and a new portrait of the physician. A bust of Dr. Reed was placed in the New York University Hall of Fame in 1948.

Post-1935 Developments in Southern State Public Health Programs*

VALERIE A. EARLE

Assistant Professor and Research Associate, Bureau of Public Administration, University of Alabama, University, Ala.

AS Dr. William R. Willard has said, the Social Security Act of 1935 inaugurated a new epoch in the field of public health in the United States.[1] In the intervening 15 years, significant developments have occurred both in respect to policy and administration. Expanding services have been made available to increasing numbers of people, in an increasingly effective manner, through the improvement of administrative practice.

It is the purpose of this article to analyze the development of grants-in-aid health programs in the southern states since 1935, with only indirect attention given to details of an administrative nature.

There are many criteria which may be used to measure development of public health services. Certainly one of the most important of these is the amount of money spent in the health field by state governments.

State spending for health, on the whole never really adequate, had fallen off during the first years of the depression thirties. Table 1 indicates this decline and the marked increase in spending in the post-1935 period.

It is interesting to note that the rate of increase in southern spending for state health departments exceeded that for all 48 states in the 1930–1940 decade—41 per cent as compared with 35 per cent. However, in the 1940–1950 decade, the South increased appropriations 292 per cent, while the nation as a whole increased them 331 per cent. Southern population remained a fairly stable portion of the whole.

An added significance of the figures in Table 1 comes to light when they are considered in conjunction with federal grants to the states in selected health areas. The southern share in federal health grants has ranged from 26 per cent for cancer control in 1949 to 93 per cent for hospital construction as of May 31 in the same year. Of the general health grants—those consistently the largest—the South has received from 29 to 34 per cent.† When these figures are compared with the southern share of state health department appropriations and with the southern portion of national population, it is easily concluded that the South has fared better than other sections in regard to federal funds for health work.

A second most important criterion for measuring progress in the public health program is the increase in number of local health units. It is through the local health unit that services are made directly available to the people.

From 1930 to 1948, the latest year for which figures have been published

* While no arbitrary selection of states to form a particular region can be completely satisfactory, the selection made by V. O. Key in his study, *Southern Politics in State and Nation* (New York: Knopf, 1949), seems valid for this study. States included are Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

† Figures derived from sources shown in References 2, 3, and 4 at end of article.

TABLE 1

The Social Security Act and State Appropriations for General Health Work to State Health Departments *

Year	State Public Health Appropriations		State Per Capita Rate of Spending		Per cent Southern Appropriations are of All State Appropriations	Per cent Southern Population Is of Total 48 State Population
	All States	Southern States	All States	Southern States		
1930	$14,529,798	$ 3,274,546	$0.118	$0.113	22½	23
1935	13,258,096	2,960,960	0.105	0.109	22½	24
1941	19,627,605	4,632,565	0.149	0.161	23½	25
1949	74,510,913	15,362,845	0.493	0.417	20½	24
1950 (estimated)	84,725,526	18,203,345	0.562	0.493	22	24

* Data derived from *Public Health Service Bull. No. 184* (2nd ed.), pp. 151–152; *Public Health Bull. No. 300*, p. 7; unpublished tables from the U. S. Public Health Service; U S. Department of Commerce, *Statistical Abstract of the United States, 1940*, Washington: Govt. Ptg. Office, 1941, p. 3; and Bureau of the Census, *Census of Population*, Series PC-9, Advance Reports, Washington: Govt. Ptg. Office (Nov. 5), 1950.

by the U. S. Public Health Service, the number of counties in the United States served by local health units jumped from 505 to 1,874 and the number of people served, from 34.1 per cent to 72 per cent of the nation's population.[5, 6] Viewed in the light of this 48 state increase in service, how do the southern states measure up?

In 1930, 288 of the 1,111 southern counties had local health units. By 1942 the number had increased to 644, and by 1948 to 768. In 1930, the per cent of southern population covered by local health service ranged from 0.3 per cent in one state to 85.6 per cent, and averaged 39.3 per cent. In 1948, the population covered ranged from 63.8 to 100 per cent and the average was 83 per cent. Two states had 100 per cent coverage. Thus the percentage of southern counties and population served by local units was higher in 1948 than that in the nation as a whole.[6–8]

Lest, however, one become overly enthusiastic about southern progress in health unit coverage, it is well to keep in mind that the National Health Assembly has estimated that in the 48 states as whole, only 3.4 per cent of the population is served by local health units deemed adequate by professionally determined standards. Only four-tenths of 1 per cent of these people live in the South. In 4 of the 11 southern states, not a single local health unit was adequately staffed as late as 1947. In the remaining 7 states, only 17 units were so staffed.

A third indication of progress in public health since 1935 may be found in program developments. Prior to passage of the Social Security Act, state public health work was largely confined to traditional functions of a preventive and statistical nature. There were, of course, strong financial reasons for this. State funds sufficient to support a broad public health program were generally not forthcoming and with the expiration of federal grants for maternal and child health work in 1929, federal assistance had been greatly reduced.

In the field of cancer control, not one southern state had set up a separately organized program prior to 1935, and

only 2 states had done so prior to 1940. In the field of mental hygiene—apart from the usual program for hospitalization of the obviously serious cases—only one southern state was active before 1935. Despite the fact that the Sheppard-Towner Act had created from 1921 to 1929 fairly widespread interest in the organization of maternal and child health programs, only one state had set up a pre-1935 nutrition program. Approximately one-half of the states had no separately organized state program for school health services (other than the requirement for compulsory vaccination), or for dental health services or crippled children's services.

Seven of the southern states had no tuberculosis control program aside from the ordinary communicable disease control program and the state hospitalization program. Three had no independently organized venereal disease program. Seven had no health education projects as such. In the basic and traditional fields of sanitation and pure food and drugs enforcement, 10 states had no separate state programs for rodent control, 7 no program for supervision of garbage collection and disposal, 3 no water pollution control program, and 3 no state program for safeguarding milk.[9]

The period since 1935 has witnessed the development of these activities, along with others, in all the southern states.

Take, for example, the maternal and child health program, inaugurated first in 1921 to attack the nation's shamefully high maternity and infant mortality rates. In 1930, the expenditures for this work ranged from $9,000 to $77,000 in the southern states, the average being approximately $43,000. Five years after enactment of the Social Security Act, expenditures ranged from $113,000 to $252,000, the average being $161,818.

In 1930, 2 southern states reported no prenatal clinics for expectant mothers; 6 reported clinics or conferences held sporadically; and only 3 reported full-time permanent clinic arrangements. Of these 3, Alabama reported 284 clinics held regularly throughout the state, Mississippi 10, and South Carolina only 4.

By 1940, all but one southern state provided for assistance, either through grants of money or loans of personnel, to local health units for maintaining a regular program of pre- and postnatal clinics and home nursing services for mothers and children; the single exception provided assistance to local units only for home nursing services.

Clinics for infants and preschool children also showed a gain in the decade from 1930 to 1940. In 1930, only 2 states failed to make any provision for such clinics. However, the number of clinics held in a state was often extremely small. By 1940, all states had a regularly established program of clinics for children and all were devoting considerable attention to these clinics.

In 1930, maternal and child health work was limited to the clinics, the instruction and licensing of midwives (only 5 of the southern states required licenses), the licensing and inspection of lying-in hospitals (there were no such hospitals in Mississippi, North and South Carolina), the licensing of orphanages, and the regulation of such matters as the dropping of prophylactic materials into the eyes of new-born babes. By 1940, the southern states were conducting maternal and child health educational programs for the general public, public health nurses, private duty nurses, and school teachers. Three states were giving home medical and nursing delivery service, and 3 others were giving home nursing service for new mothers; however, these 6 states were operating the delivery and nursing care programs in limited areas and largely for demonstration purposes.

Ten southern states were providing

free obstetrical consultation service. Four were giving free incubator service. Ten were conducting follow-up studies of maternal and infant deaths. Five gave free pediatric consultation service.

By 1947, the southern states had added other new services for mothers and children: research on premature births and the care of premature infants, the provision of special facilities for the care of such infants, and the provision of nutrition services.

Health programs for the control of tuberculosis and the venereal diseases have also expanded considerably since 1935.

In 1930, only 6 southern states reported publicly maintained clinics and dispensaries for examination and treatment of convalescent tuberculosis cases. In 8 southern states, in which the state operated tuberculosis hospitals, the number of beds ranged from 65 to 785, the average number being 376. In 2 southern states, there were no state tuberculosis facilities, sanatoria being maintained by counties and municipalities. In these two states, the total number of beds in county and city hospitals was 224 and 900 respectively. One southern state reported no separate facilities, public or private, for the special treatment of tuberculosis.

By 1940 the number of beds available in the southern states for tuberculosis care ranged from 106 to 1319, the average being 678.

Moreover, the states had entered into new activities, over and above the provision of treatment of the serious cases. New case finding techniques, widespread examination through portable x-ray machines, which can cover considerable areas even in the period of a month, free examination of x-ray pictures, and the use of new methods of curing the disease, all represent a broadening of the tuberculosis program. As the National Health Assembly reported in 1949, tuberculosis is already on the decline in many places and it is more than probable that these techniques will reduce significantly the need for tuberculosis beds.

In 1930, programs for venereal disease control were restricted to free or small-charge Wasserman examinations and very limited free treatment. Three southern states gave Wasserman tests without charge. Four gave treatment free to indigents. Only 2 operated or supported venereal disease clinics, and of these 2 states, Mississippi had only one such clinic. Only 2 southern states earmarked public health funds for venereal disease work; Georgia spent 6.1 per cent of its health funds for this work and Virginia 0.7 per cent. In the nation as a whole, 21 states so earmarked funds; Georgia ranked twelfth and Virginia twenty-first in amount spent.

Ten years later all states were earmarking funds for venereal disease work. The percentage of total southern state public health expenditures for venereal disease control ranged from approximately 2 per cent to 10 per cent. Only 5 states were as yet operating or subsidizing public clinics, but all were furnishing some drugs free to private physicians for treatment of indigent patients, and one was providing free hospitalization for indigents. All had improved their case finding and reporting techniques, and all were engaging in fairly widespread educational campaigns.

Probably the most significant development in venereal disease control work since 1940 has been the development of rapid treatments for cure available through Rapid Treatment Clinics. These clinics were financed in large part by the federal government during World War II. Since the war, federal funds have been decreased, but some Rapid Treatment Clinics are still operating in all southern states.

In two other areas of public health work, it is interesting to note expansion since 1935. These are sanitation and

the provision of laboratory services.

In 1930, the southern states spent from 5.4 per cent to 26.7 per cent of their state public health funds on sanitation work. While all state health departments had compulsory controls over public water supplies and 9 of the 11 had such controls over sewage systems, the remaining 2 having only advisory responsibilities, only 5 departments assigned full-time sanitary engineers to antimosquito malaria control, only 5 had control over the ice industry, only 4 had control over swimming pools, only 3 had control over roadside water supplies, and only 4 over sanitation of public camping grounds. Pest control and general food sanitation were largely undeveloped areas of health work.

By 1940, sanitation expenditures accounted for a smaller percentage of public health expenditures in the southern states, but all state health departments had compulsory control over water supplies and sewage systems of cities, schools, industries, camps, and roadside parks. Nine had such control with respect to private premises. All health departments were required to approve plans for water and sewage systems and 2 licensed water and sewage system operators. All engaged to some degree in stream pollution control. In addition, a few health departments had control over garbage collection, pest destruction, and such matters as the control of smoke, fumes, and odors.

Appropriations for laboratory services ranged in 1930 from 7.1 to 21.3 per cent of state public health expenditures. Ten states made no charge for any laboratory services; one charged for examination of private water supplies and one for what were regarded as unusual services, such as the analysis of cancer tissues. Six states provided financial assistance to branch laboratories operated by local governments. The number of these laboratories ranged in the 6 states from three to six.

By 1940, 7 states were operating branch laboratories, and all southern states had broadened the services offered at no charge. Although many of these free services were available in theory only to indigents, no very careful check upon ability to pay was being made.

One final recently instituted public health program deserves consideration in this discussion of health developments stimulated by federal grants-in-aid. This is the Hill-Burton Program providing for federal assistance in surveying hospital and health unit needs in each state and in constructing needed facilities.

As has already been indicated, the southern states received by May 31, 1949, 93 per cent of the federal funds made available for approved projects. As of that date, the U. S. Public Health Service reported that the largest number of project applications had come from Region VI, comprising Alabama, Florida, Georgia, Mississippi, South Carolina, Tennessee, and Puerto Rico and the Virgin Islands. Region VI also had the largest number of projects approved—219. Mississippi was first in the nation in number of projects approved and Texas was first in construction costs and in number of new beds provided.

In 1950, South Carolina was first in the nation in number of health units under construction.[3, 10]

One final measure of expanding health programs can be found in comparing the number of persons employed before and after 1935. Table 2 indicates the percentage of increase or decrease in all classes of personnel for the 48 states and for the 11 southern states.

It will be noted that in the first 10 year period, all categories but one—that of doctors—showed an increase for the 48 states, and all categories showed an increase in the southern states. The largest increases in professional workers for all states were in the categories of laboratory technicians, dentists, and

TABLE 2

Percentage of Increase or Decrease in Two 10-Year Periods in Personnel of State Health Departments *

Occupational Classification	1930–1940		1940–1950	
	All States	Southern States	All States	Southern States
All Classifications	+ 141	+ 312	+ 47	+ 69
Doctors	— 17	+ 155	— 10	— 23
Nurses	+ 148	+ 84	— 30	— 40
Dentists	+ 360	+ 347	+ 22	— 7
Sanitary Engineers	+ 330	+ 243	+ 48	+ 58
Sanitarians	+ 178	+ 476	— 2	— 28
Laboratory Technicians	+ 467	+ 382	+ 37	+ 52
Health Educators	+ 21	+ 273	+ 57	+ 27
Clerical, Administrative, Fiscal	+ 278	+ 178	+ 77	+ 147
Laborers and Maintenance Workers	+ 150	+ 922	+ 300	+ 482
Other and Unclassified	+ 50	+ 72	+ 50	+ 50

* Figures derived from *Public Health Service Bull No. 134* (2nd ed.), pp. 36–645; ibid. (3rd ed.), Chap. X, Table 3; and unpublished data collected by the U. S. Public Health Service. All 1930 figures other than that for the total number of employees are approximations.

sanitary engineers, in descending order. In the southern states, the greatest increases were in the sanitarian group, then among the laboratory technicians, dentists, health educators, and sanitary engineers.

Only two groups of workers increased by more than five times their 1930 numbers; for all states, this was the laboratory technician group, while for the southern states it was the sanitarian. Two classes of professional workers increased by four times their 1930 numbers in all states: the sanitary engineers and the dentists. In the southern states, the laboratory technicians and the dentists quadrupled in number.

In view of the more serious sanitation problems in the South, gains in the sanitarian and sanitary engineering groups may be considered as appropriate. The fact that the southern states outgained the 48 states as a whole in sanitarians, but not in graduate sanitary engineers, may be explained in terms of less attractive employment conditions, or in terms of a decision to use a small number of engineers to guide the programs, while sanitarians are used for work of a less exacting nature.

The fact that public health nurses increased in the first 10 year period contained in the table by only 84 per cent, as contrasted with the national increase of 148 per cent, is significant. Further, it will be noted that the southern decrease in nurses in the second decade has been larger than the decrease for the nation as a whole. Many students of public health problems believe that in rural areas no public health worker is more important than the nurse. Obviously the predominately rural South should have been making real gains in this important category of health worker.

In the 1940–1950 decade, decreases in three categories—doctors, nurses, and sanitarians—were experienced in all states. In addition, the number of dentists declined in the southern states. The explanation for these decreases is not difficult to discover—the war and its long-range effects upon distribution of medical personnel. A further comment, to the effect that after the striking increases in the preceding 10 years some slowing down was to be expected, is not inappropriate.

The South outstripped the nation as

a whole in the growth in numbers of the sanitary engineer and the laboratory technician. At the same time, decreases in the number of doctors, dentists, and, as previously mentioned, nurses were more severe in the South than in the nation as a whole.

Two classes of workers listed as "other and unclassified" in 1930 and 1940 *Public Health Reports* have since 1948 become sufficiently numerous to merit separate listing. These are the medical and psychiatric social workers and the nutritionists. In 1949, the 11 southern states had 19 per cent of all health workers of the first class, and 32 per cent of those in the second group. In 1950, the estimated figures were 23 per cent and 33 per cent, respectively.

Employees in the clerical, administrative, and fiscal group and in the maintenance group have increased so substantially in both 10 year periods that some question might well be raised as to whether their increase has not been disproportionate. It should be pointed out that the vast majority of these employees are to be found in state health department offices—not out in the field, either in the local health units or in local government health services. Hence, if it were possible to present figures for all public health workers, in the state office and in the field, the proportion of clerical and administrative employees would become far more reasonable.

The past 15 years have been years of notable progress in public health for the entire nation. The southern share in that progress has in most respects been significant. As has been shown, more money is now being spent and more personnel are now employed in making available to a greater number of southerners the benefits of a broader health program than at any time before 1935. The fact that the southern share of federal grants for health has been larger than its over-all share of grants-in-aid; and greater proportionately than its share of the nation's population and of the total state expenditures for health may surely be taken as significant in considering this post-1935 development.

Since the South has been for many years a low-income area and an area deficient in private medical personnel and facilities, the importance of this increased public health activity can hardly be overemphasized. The South continues to be in great need of better health services, the cost of which it is not yet prepared to support in proportion to its area or population.

The preceding paragraph need not be taken as an argument for federal subsidization of the South into the indefinite future. On the contrary, it would seem that federal assistance to enable the South to improve its health status will eventually help to produce a South capable of taking care of itself and of bearing its fair share of all the nation's social needs.

REFERENCES

1. Willard, William R. Fifteen Years of Public Health. *Public Administration Review* 10:99 (Spring), 1950.
2. Mountin, J. W., *et al.* Ten Years of Federal Grants-in-Aid for Public Health, 1936–1946. Washington: Govt. Ptg. Office, 1947. *Pub. Health Bull.* No. 300, p. 6.
3. Hoge, Vane M. Hospital Survey and Construction Program—Progress Report. *Pub. Health Rep.* 64, 32:991–1020 (Aug. 19), 1949.
4. From unpublished data compiled by the U. S. Public Health Service.
5. National Health Assembly. *America's Health—A Report to the Nation* (Ewing Report). New York: Harper, 1949, pp. 60–61.
6. Ferrell, J. A., *et al.*, compilers. *Health Departments of States and Provinces of the United States and Canada* (2nd ed.). Washington: Govt. Ptg. Office, 1932. *Pub. Health Bull.* No. 184, pp. 40–52.
7. Kratz, F. W. Status of Full-Time Health Organization at the End of the Fiscal Year 1941–1942. *Pub. Health Rep.* 58, 9:345–351 (Feb. 26), 1943.
8. *Pub. Health Rep.* Supplement No. 194 (1949 rev.).
9. Material from an unpublished chart prepared by the U. S. Public Health Service.
10. Cronin, J. W., *et al.* Hospital Construction under the Hill-Burton Program. *Pub. Health Rep.* 65, 23:743–770 (June 9), 1950.

American Journal of Public Health

and THE NATION'S HEALTH

Official Monthly Publication of the American Public Health Association, Inc.

Volume 41 November, 1951 **Number 11**

Editorial Board

REGINALD M. ATWATER, M.D.
Chairman, and Managing Editor

MARK D. HOLLIS, C.E.
RUTH W. HUBBARD, R.N.
RALPH S. MUCKENFUSS, M.D.
RAYMOND S. PATTERSON, PH.D.
JOHN D. PORTERFIELD, M.D.
GEORGE ROSEN, M.D.
C.-E. A. WINSLOW, DR.P.H.

C.-E. A. WINSLOW, DR.P.H., *Editor*
AUGUSTA JAY, *Editorial Consultant*

SOCIAL MEDICINE

WE have referred previously in these columns to the remarkable progress made during recent years in the development and improvement of medical and public health education in Latin America. The best schools of medicine and of public health in this area rank with the top flight of such institutions anywhere in the world. The First Pan-American Congress on Medical Education, held in Lima last May, was therefore an occasion of major significance. Its "Final Acts" include thirty-five specific recommendations which may be studied with profit by medical educators in all countries.

It is of special interest to us in the field of public health that the Lima Declaration emphasized the conviction that "social and preventive medicine, because of its natural relation to general medicine, must form a part of the entire curriculum." Still more heartening is it to note that the first of the thirty-five specific recommendations of the Declaration is "to direct medical education toward preventive and social medicine."

The term used in Latin America is "social medicine" not "socialized medicine." The latter phrase has unfortunate emotional connotations. It suggests that something, presumably harmful, is to be done *to* the medical profession. "Social medicine" is, on the other hand, an ideal which must be attained *by* the medical profession and the related public health professions in fulfilment of their responsibilities to the community they serve.

It is this sort of mutual coöperation between the health officer and the practising physician which President Shepard has in mind in his admirable presidential address which opens this issue of the JOURNAL.

The goals of "social medicine" have been formulated in various ways. One of the best definitions is that provided some years ago [1] by Dr. René Sand of Belgium—probably the leading authority of the world in this field. He said that social medicine (he called it "sociological" medicine at that time) is "the art of prevention and cure, considered, in its scientific basis and its individual and collective applications, from the point of view of the reciprocal relations which connect the health of man with his living conditions."

The fact that health is influenced by living conditions is the vital essential in this definition. We must recognize that men and women are often sick because they are poor (as well as, often, poor because they are sick). If we are honest with ourselves we know that our health ideals cannot be attained without wider extension of medical care facilities, of housing facilities, of social security than now exists, even in the United States. How such extensions can be wisely attained—whether by professional action, by voluntary group action, by state action or all three—is a subject for serious and honest scientific study, not for political propaganda.

It was "social medicine" of this sort of which Dr. Willard C. Rappleye was thinking when in his report from the Faculty of Medicine of Columbia University last summer he pointed out that "Medical security is growing in prominence in the thinking of labor leaders, industrial and governmental officials and the medical profession. The American people are convinced of the value of adequate medical care and sooner or later will determine that in some way the benefits of modern medicine must be made available to all. It is important for the profession, as well as the public, to realize that adequate medical care is intended for the people and not for the benefit of the profession. It is this realization on the part of medical, as well as public leaders, that has brought forward numerous proposals for advancing this important aspect of national welfare. It is often difficult to steer a course in the middle of the road in these professional fields because that requires a high order of courage as well as judgment.

"What must be avoided, however, are the proposals of the extremists who, on the one hand, advocate complete governmental control and management and, on the other, those who hold vigorously to the defense of the status quo and vested interests. Nevertheless, progress must be made but it should be by evolution from the existing high order of medical and professional services that are available in many areas of the country and for certain economic groups. It is the responsibility of our professions and the universities to help formulate plans, programs and leaders who may direct and guide safely these various steps in the direction of comprehensive, prepayment medical care for the entire population."

It is this type of constructive thinking, not the use of political slogans, which represents—as we believe—the real attitude of the medical profession of the United States.

1. Sand, René. *Health and Human Progress.* New York: Macmillan, 1936.

THE HOSPITAL AND THE COMMUNITY

PROFESSOR J. M. Mackintosh of the London School of Hygiene, in an address originally prepared for the American Hospital Administrators' Correspondence Club, has given his answer to the question "What Is a Hospital For?" [1]

His views are not revolutionary. They represent the position of many thoughtful hospital administrators on both sides of the Atlantic. Yet the ideals he sets forth are still so far beyond ordinary current practice that they are stimulating and inspiring for all of us. "We know so much better than we do." Or, as Tacitus, quoted in this paper said, "They build a hospital and call it health—they make a sick bay and call it a health center."

Dr. Mackintosh points out that "The appropriate field of study of a hospital is not sickness in the narrow sense but life in the broad sense. Sickness is an incident—grave, troublesome, or restful—in the life of a person, but to the hospital and its staff sickness is a challenge, a focus of enquiry from which prevention should radiate as well as the cure of the individual. Among the many factors that contribute to health the care of the sick is admittedly vitally important. Those who are ill have lost something both in confidence and in that balance of mind and body which we call wellbeing. Restoration is the object of hospital care for the individual so that he may survive and become once more productive in society. It is primarily in the restorative process that the hospital contributes to health and therefore its essential function is to provide medical and restorative services which only a specialized institution can organize."

Therefore, the hospital should consider the following problems, as pointed out by Dr. J. L. Halliday of Glasgow in his book *Psychosomatic Medicine*. It should ask itself, with regard to every patient:

"1. Why is he sick?
2. Why did he take ill when he did?
3. What personal family and social problems were precipitated by his illness?
4. What will become of him when it is time for him to leave the hospital?
5. How can we make him (and his relatives) more competent people during the patient's stay in hospital and better equipped to meet a later catastrophe?"

Dr. Mackintosh cites a helpful analogy from Dr. Hugh Paul, Medical Officer of Health of Smethwick. "Let us take our example from industry. Supposing the Board of Management of a large motor manufacturing firm were to find that an increasing proportion of their cars were returned to the Service Department for carburetor repairs. What would be their reaction? If they followed the example of the Hospital Management Committee their task would be simple; they would arrange for increased floor space, increased buildings, and increased equipment in the Service Repair Department adequate in quantity and quality to deal promptly and efficiently with the incoming complaints. This, however, is hardly the line of approach which a modern manufacturer would adopt if he wishes to keep out of the bankruptcy court. He would at all costs endeavor to find out the cause of the defects in his carburetors and to remedy it at its source."

This, remember, is a Health Officer speaking. The hospital corresponds in our general social scheme to the Service Repair Department in a factory. Its primary function is to perform its repair task well. The health department corresponds in health matters, to the Board of Management of the factory as a whole; and over-all community health planning is its responsibility.

Sound over-all health planning, however, requires an understanding on the part of the hospital of the wider goals of the community health program as a whole. As Dr. Mackintosh points out, "The good hospital is *not* a structure bounded by four walls or even extended by pseudopodial clinics. It is essentially a sphere of influence reaching far beyond its own curtilage to the homes of the families it serves." Above all, it is certainly the responsibility of the hospital to consider as one of its major functions, the responsibility for a successful transition between intramural care and the restoration of the discharged patient to a normal life. Professor H. W. C. Vines, dean of one of the great English teaching hospitals, has said that "There is too great a tendency to think of hospitals as a receptacle for sick people, a sort of dump. Not many years ago many hospitals were just that; now we recognize long stay hos-

pitals for the chronic sick, special hospitals for particular diseases (which are really beginning to disappear) and acute general hospitals where the average stay does not exceed two or three weeks. In time there will almost certainly be post-operative or convalescent hospitals, where lower standards of nursing, both quantitative and qualitative, may be allowed. That will result in a quicker turnover of cases in the acute hospital. Each type of hospital has its special problems of planning relative to its function."

The differentiation of hospital facilities has its economic as well as its social importance. Professor Mackintosh points out that "The hospital which is equipped and staffed for highly skilled diagnosis and treatment should therefore be constantly on the watch to cut down non-essentials because technically each bed that it provides is more extravagant in both capital and maintenance than the most luxurious hotel. The cost is obviously growing as medical science becomes more exact and more specialized. In England today the cost per patient bed-day is increasing at a colossal rate; each bed costs to begin with about £4,000 in capital and in its services including staff, upkeep, etc., its daily cost runs between £2 and £3. How many people are occupying these expensive services who do not really need them? How many are convalescing and could and should have been moved to a convalescent hospital with much simpler bed accommodation and much more simplified nursing care, or even to their own homes, one, two, three days or even weeks ago? How many should have been moved to other establishments with overheads perhaps one-fifth of the cost of this key establishment? And if we ever get such lower-cost establishments it had better be soon before our costs increase still more and our waiting lists become still longer. Surely the cardinal rule of today is never to use persons or facilities for purposes below the level for which they are equipped."

The United States has all of the problems emphasized by Professor Mackintosh. It is trying to meet them by such promising experiments as the HIP insurance program, the Montefiore Home Care Program, the various regionalization plans such as that of the Brigham Associates, and programs for vocational rehabilitation (discussed in an article in this issue of the JOURNAL).[2]

It is helpful and inspiring to see how constructive is the thinking of our British brethren, health officers and hospital administrators, in this important field.

---

1. Mackintosh, J. M. What Is a Hospital For? *W.H.O./P.H.A./4, World Health Organization*, Geneva (Feb. 28), 1951.
2. Fortune, George J. A Community Welfare Agency and a University Coöperating in a Speech and Hearing Program. *A.J.P.H.* 41, 11:1390–1394 (Nov.), 1951.

A.P.H.A. MEMBERSHIP AS A LOCAL RESPONSIBILITY

THE Editor has long had the feeling that (1) the membership of the American Public Health Association could and should be greatly enlarged; and (2) that the expansion of this membership can best be accomplished by decentralized effort on the part of local branches of the Association. Statistics have been collected in order to throw light on the problems involved.

Tables presented on pages 1437–1438 of this JOURNAL summarize some of the major results obtained. Table 1 contains data (collected by the U.S.P.H.S.) on

the full-time personnel of professional grade employed by state and local health departments, state by state. Sub-professional personnel (including auxiliary sanitation personnel, maintenance, custodial and service staff, clerical, and financial personnel) has been omitted, so that all persons tabulated should be potential members of the A.P.H.A. Table 1 also shows the number of members (including Fellows) of the Association for each state, with the ratio between the two main figures involved. Table 2 gives separate data for the states where a state society has been organized as an affiliate of the A.P.H.A. (Complete data for the two regional Branches were not available.)

Data in Table 1 show that Connecticut stands at the top of the list with a ratio of 941 A.P.H.A. members per 1,000 professional official public health workers. In Iowa, Massachusetts, and Minnesota the ratio is more than 800. Colorado, Illinois, Montana, New Jersey, and Rhode Island show ratios between 700 and 799. Ratios from five states fall between 600 and 699; from 2 states, between 500 and 599; from 8 states, between 400 and 499; and from 15 states between 300 and 399. Arkansas, Delaware, Louisiana, North Carolina, and Oklahoma have ratios between 200 and 299; and Alabama, Kentucky, Mississippi, and South Carolina, between 100 and 199. It will be noted that the 9 ratios below 300 are in the Southern states. A summary of the distribution follows:

A.P.H.A. Members per 1,000 Employees	*Number of States*
100–199	4
200–299	5
300–399	15
400–499	8
500–599	2
600–699	5
700–799	5
800–899	3
Over 900	1

Such a ratio of A.P.H.A. members to professional personnel employed by official agencies is, of course, in one sense a misleading one, since many potential members of the A.P.H.A. are not employed by state or local health departments. Teachers, research workers in private laboratories, industrial hygienists, members of the staffs of visiting nurse associations and voluntary societies, hospital superintendents and many others are among our members.

Furthermore, the local full-time health department personnel figures as collected by the U.S.P.H.S. include data for only those departments receiving federal or state subsidy (including data for 1,193 full-time health jurisdictions). Therefore, states in which many units are subsidized will show reasonably complete returns while states where less general use is made of federal grants will have an understatement of their potential membership.

For both these reasons, the ratios quoted (of A.P.H.A. members per 1,000 full-time health department employees) are far higher than they would be if actual members were compared with all potential members. The overstatement of the proportion is less excessive in states where federal grants are widely used than in those where such grants are less common; but in all instances, the gap between potential and actual members is greater than the ratios suggest.

A comparison of Tables 1 and 2 indicates that in 25 states, with state organizations affiliated with the Association, there are 13,804 professional public health workers employed by state and local health departments, with 10,382 members of

the state public health societies concerned, a fairly comprehensive coverage; but these same states provide only 6,306 members of the A.P.H.A., or a ratio of 457 A.P.H.A. members per 1,000 professional public employees. In 23 states which have no affiliated state societies, there are 11,068 professional workers in state and local health departments, with only 4,304 A.P.H.A. members, a ratio of 389 per 1,000 professional public health employees.

If the ratio of 800 members per 1,000 employees (exceeded in Connecticut, Iowa, Massachusetts, and Minnesota) were reached for the country as a whole, the A.P.H.A. would have about 8,000 more members and Fellows than at present.

We believe that this situation presents a direct and vital challenge to all loyal A.P.H.A. members. It is not a problem which can be solved in New York. Only the local group in a given state knows who the public health workers of the area are; and comparison with A.P.H.A. membership lists would at once indicate those who should be asked to join. In the organized state affiliated societies alone there are over 4,000 members who have not joined the A.P.H.A. In the twenty-three states without affiliated groups, such societies might, in many cases, be established with advantage, thus securing representation from the area in our Governing Council. Or, as a temporary expedient, an *ad hoc* membership committee could be formed by a few public-spirited individuals.

We urge that the figures collected in this incomplete but suggestive survey be given careful consideration by our present membership. The future of the American Public Health Association is in their hands and is their responsibility.

PUBLIC HEALTH HORIZONS IN LATIN AMERICA

Reginald M. Atwater, M.D., Executive Secretary of the American Public Health Association, recently reported at a staff meeting of the Association held at 1790 Broadway, New York City, on a ten week circuit of visits that included Mexico, Guatemala, Panama, Peru, Chile, Argentina, Uruguay, Brazil, and Venezuela. Between the end of June and early September Dr. Atwater visited medical and public health interests in these countries at the invitation of the U. S. Department of State. During this period he was able to make contacts with a considerable number of the 300 A.P.H.A. members and Fellows who live in these countries, and to establish contacts with public health associations in Mexico, Peru, Chile, Argentina, Uruguay, Brazil and Venezuela, and with schools of public health in Mexico, Chile, Argentina, and Brazil.

Dr. Atwater emphasized the changes that have taken place during the last decade. The work of the Pan American Sanitary Bureau (now a regional arm of WHO) has been revitalized and has been organized as the Institute of Inter-American Affairs, an agency of the United States Government which, in coöperation with other countries in this hemisphere, has developed what is perhaps the most extensive international series of public health projects in existence. There are numerous tangible results of these enterprises consisting of health centers, hospitals, public water systems, sewage disposal plants, and educational institutions. Even more important, however, are the resources that have been developed in trained personnel of whom several hundred have had graduate fellowships in the United States. At the present time many of these fellows are being trained outside of the United States and under circumstances which make it unnecessary for them to learn a new language.

Of special interest is the graduate public health education under way in Mexico City; in Santiago, Chile; Buenos Aires, Santa Fe, and Tucuman, Argentina, São Paulo, Brazil; and in Caracas, Venezuela. Although varying in type and with differing backgrounds, these institutions are all performing creditable service which would have been outstanding in North America before the expansion in public health training began about 1918. In some of these instances the training appeared to Dr. Atwater to be quite comparable in extent and quality with that now available in schools of public health in North America. He noted similarity of the curricula to those of North America, whereas 30 years ago the training tended to be patterned after European methods. He spoke of the effort to build a library of translations of textbooks for public health, including volumes from the A.P.H.A. list like *The Control of Communicable Diseases in Man*, now available through the Pan American Sanitary Bureau in Spanish and shortly to be available in Portuguese, and such volumes as *Standard Methods for the Examination of Dairy Products* and *Standard Methods for the Examination of Water and Sewage*. Other laboratory volumes such as *Diagnostic Procedures and Reagents* and *Diagnostic Procedures for Virus and Rickettsial Diseases* are widely in use. Translations of these into Spanish and Portuguese seemed to him highly desirable. He expressed gratification at the success of the effort begun during World War II to translate outstanding North American texts into Spanish and Portuguese, such as those of Anderson and Arnstein on communicable disease; Smillie on public health administration, and Mustard on rural health practice.

Dr. Atwater reported the varying patterns of administering health centers and noted that in the majority of countries

clinical medical services are combined with preventive services in the health centers. In Uruguay and Brazil, however, the tendency is to separate these services as is customary in the United States. He mentioned in this connection certain areas with prevalent conditions not frequently seen in North America as, for instance, scabies complicated by streptococcal infections and constituting a community-wide problem, resulting in many cases of acute nephritis, especially in children. He noted the areas of high prevalence in tuberculosis in which newer methods of control are extensively used. BCG is having a wide trial in most of these countries and efforts are under way to improve methods for the use of streptomycin in the numerous cases of tuberculous meningitis and to test out newer drugs like chloromycetin in typhoid and typhus fevers.

There are extraordinary developments in Guatemala where a nutritional laboratory (Institute of Nutrition of Central America and Panama) has been set up under auspices of the Central American countries and Panama. Here under the direction of Dr. Nevin Scrimshaw very well equipped laboratories are studying the basic problems of nutrition, with special reference to tropical and subtropical areas and the local diet. Coordinated with these laboratory studies there are field studies under way with excellent controls which give promise of answering such puzzling problems as to whether a diet adequate in protein can be supplied in these areas from vegetable sources in view of the fact that animal proteins are difficult to obtain. In this Institute nationals of Central American countries are working in a way which impressed Dr. Atwater with the high scientific quality of their work and the cumulative significance of the studies.

Dr. Atwater had great interest in the studies being conducted in Guatamala by a team of the U. S. Public Health Service on onchocerciasis. During his visit he was able to work out a revision of the chapter on this subject in the A.P.H.A. volume *The Control of Communicable Diseases in Man* which will bring this chapter in line with the latest studies. This seems important in view of newly recognized areas where this disease is prevalent in northern South America.

Because it is basic to all of public health, Dr. Atwater found himself specially interested in medical and nursing education. He reported very promising new developments along the lines approved in the United States for medicine in one of the institutions in Mexico City, in Panama, in Lima, in Santiago, in Argentina, in Uruguay, and in Brazil. The Medical School of the University of São Paulo has been fully approved by the American Medical Association, representing the first institution of its kind to be approved in the Latin American World. The quality of teaching in this Institution appears to be fully equal to that in good schools in the United States. The development of the Faculty of Medicine in São Paulo has paralleled that of the Faculty of Hygiene which since its early years has been under the direction of the late G. H. de Paulo Souza, M.D., Dr.P.H., and which now will be under the direction of his successor, Paulo C. A. Antunes, M.D., Dr.P.H., presently Assistant Director of the Pan American Sanitary Bureau, Washington.

Among developments in the field of nursing education was a workshop which ran for two months during the summer at Guatemala City under the auspices of the Pan American Sanitary Bureau and attended by nurses from most of the Central and South American countries. This workshop was organized like its predecessor in 1950 at Vina del Mar, Chile, along the most modern educational lines with active participation by the nurses in attendance who for the

most part were at the supervisory level.

Dr. Atwater concluded that from the standpoint of staff members of the A.P.H.A. it was imperative that they should do their utmost to help visitors from other countries to understand the ideals of medical and public health education in the United States and to assist them in every way to grasp the fundamentals of North American experience. Many advantages have accrued from similar visits made by other public health workers from the United States such as Dr. W. G. Smillie of Cornell University, Dr. Gaylord W. Anderson of the University of Minnesota, Dr. Pearl Kendrick of the University of Michigan, and Dr. Ruth Puffer of the Tennessee State Department of Health, in addition to the large number of persons who through other channels, such as the Pan American Sanitary Bureau, the Institute of Inter-American Affairs, the U. S. Public Health Service, and the Children's Bureau, have helped to build a two-way exchange. There is so much of interest and significance in medicine, nursing, and public health that North American nationals were well justified in going to selected areas of Central and South America to study, for these countries have much to teach us. This he thought would be a wholesome development to compensate for the numbers coming from Latin America to the United States and Canada.

An example of this mutual interchange is the fact that when newer antibiotics came up for testing against diseases, some of which are quite rare in the United States, it proved exceedingly fruitful to have ready-made contacts of persons trained in the United States in communicable disease control who graciously opened their clinics and laboratories in Latin America to studies which rapidly advanced our knowledge at critical points.

Dr. Atwater pointed out the fact that in many of the tropical diseases particularly promising studies are under way. He mentioned filariasis, schistosomiasis, onchocerciasis, pinta, Chagas' disease, *Trypanosoma rangeli* infections, yaws, malaria, and yellow fever. In connection with the latter he remarked that Brazil had not only achieved the complete elimination of *Anopheles gambiense* but is within sight of the elimination also of the yellow fever mosquito from the entire country. So far in 1951 many thousands of inspections have revealed the breeding of *Aedes aegypti* in only three instances.

He said that the problems faced in some of the South American countries throw a new light on public health administration in North America. He noted that we are faced by a nursing shortage in the United States, but he pointed out how grateful we can be for the sound foundations laid across the years and the contrast between the relatively rich resources which we have in trained personnel when compared with those in some South American countries where nursing as we know it hardly exists. He expressed the belief that this was a particularly strategic time for broad-gauge master plans for nursing to be set up in several of these countries which would permit the need to be met at a reasonably early date. He noted that it is considerably easier to build hospitals of mortar and brick and steel and to buy mechanical equipment than it is to train the human staffs necessary to operate these hospitals. The counterpart of this problem exists in connection with hospital building in the United States.

In several countries interest was expressed in working out some arrangement under which the American Public Health Association, representing as it does the oldest and the largest professional society of public health workers in the world, might extend its membership beyond North America, to include all the countries of the Western

Hemisphere. Inquiries were made with reference to the likelihood of establishing affiliated society relationships with South American groups. The governing bodies of the Association will be asked to define a policy in this regard. Dr. Atwater was of the opinion that the experience of the A.P.H.A. should be made available to these other countries and he hoped that a basis of interchange could soon be developed.

Closely allied to this proposed relationship was the need for an interchange of personnel. This might bring to countries in Central and South America some of the stimulus which has been brought to remote areas in the United States through teams of carefully selected teachers. These teams might travel together from country to country, giving inservice training courses well integrated around certain selected topics. Teachers traveling together, especially when they are bilingual, might contribute much more as a team than as individuals because of the advantage of being able to bring out differences of opinion and varying practice. He expressed the hope that it would be possible to arrange such teams of speakers in the near future.

Dr. Atwater expressed his appreciation to the Department of State for making possible his visit, and to the Executive Board of the A.P.H.A. for encouraging him to spend this time in a consecutive effort to understand the problems of the hemisphere. He urged the staff to do their utmost at the time of the Annual Meeting to make the visits of those from other countries meaningful, and he expressed the hope that there might be an increased participation by nationals of these countries in the Annual Meeting and through the *Journal* and the Committee work of the Association. It was his opinion that the things which we have in common are much more important than those wherein we have differences.

Dr. Atwater expressed special appreciation for their courtesies to the Institute of Inter-American Affairs and particularly to the Chiefs of Field Party in the various countries where the Institute is operating. He also expressed appreciation to the Pan American Sanitary Bureau and its staff for making available opportunities to him to meet public health workers. He urged his North American colleagues to take advantage of opportunities to see public health work under quite different circumstances, giving new perspectives on day-by-day problems. He specially urged those who might find it possible to see the outstanding public health program of the Amazon Valley to do so because to a very apparent degree the economy of the entire Valley depends on the maintenance of a health program which, though begun during wartime for the purpose of making rubber production possible, is now almost entirely supported by Brazil. There is general recognition that it has broad significance far beyond the problem of rubber production.

Clearing House on Public Health Salary Information and Personnel Needs

THE WASTE OF HIGH TURNOVER

The June, 1951, *Bulletin* of the Indiana State Board of Health lists 3 physicians, 5 sanitary engineers, 7 sanitarians, 3 health educators, and 2 nutritionists who have resigned from the State Board of Health within the 18 months previous. In addition, an engineer and a sanitarian joined the armed forces, and two health educators were granted leaves of absence. This represents a total loss of 26 members of the professional staff. The news item adds further that only one of these vacancies has been filled by additions to staff from the outside.

Where have these workers gone? The report does not say but other sources indicate a number of them. The five physicians went respectively to positions as chairman, department of preventive medicine, Oklahoma School of Medicine; chief, tuberculosis control division, Pittsburgh City Health Department; director, division of preventive medicine, Louisiana State Department of Health; county health officer in Texas and later state district health officer in Illinois; and professor in the University of Cincinnati. Two health educators are now director of a neighborhood house and in the extension service of Iowa State College respectively. A nutritionist is doing private consultation work.

Editorially the *Bulletin* says in part:

> The list (of resignations) is long, and the positions are important; in each case the reason is the same, simply that other states will pay more for an Indiana worker, trained in the schools and institutions of Indiana, than Indiana will pay for her own product.
>
> . . . These men have family obligations which make it necessary that they accept such tempting offers when they are made. In each case they would rather have stayed in Indiana because they are native here, have their homes here, and know the situation far better than they will in the strange setting. Furthermore, they would definitely be more useful in Indiana than they will be in a strange place—at least until a few years have passed and they have learned the new locale.
>
> . . . Approximately $30,000 a year distributed among these persons who are leaving the Board of Health would have held them. A similar amount distributed among those who are on the edge, trying to decide whether to leave us or not, would probably hold another group. It is likely that an increment of $100,000 per year for increased salaries would very largely put us in the position to compete on fairly equal terms with other states and with industry here at home in holding the people whom we have trained over the years and who compose the real State Board of Health.
>
> Once these trained workers are lost they will be very hard to replace even at greatly increased salaries. A survey made a short time ago indicated that there are seven jobs in health work for each person properly trained for the work. The ratio is probably higher at the present time.
>
> . . . During the shortage of a few years ago—1944—there was a single typhoid epidemic in northern Indiana in which 250 people were ill and thirteen died. It might have been prevented if we could have had better milk inspection and control. Directly and indirectly it cost the state at least $250,000 to say nothing of the worry, suffering, and loss of life.
>
> The engineering classes at Purdue each year are large (Purdue, a state-operated school, is the largest engineering school in the world), but very few of the graduates go into state service in the Board of Health or the Highway Department. Why? The average starting wage for the engineering class at Purdue is $305 to $310 per month, whereas the starting wage offered by the state is $265. Educated in great numbers at state expense they are, but they go elsewhere for very obvious

reasons. We are in great need of competent, experienced engineers. Of physicians, dentists and nurses, we get very few who will go into state service.

. . . It seems then, that we might somewhere find the means to prevent this very serious loss to the great state of Indiana—one of the wealthiest states in the Union. We have been saving at the spigot while we have allowed waste at the bung—"penny wise and pound foolish"—saving money on prevention while we have spent millions for treatment and welfare, after prevention has failed.

Indiana, this is strictly a business proposition. Let's hold our workers, our product, by paying them what strangers are willing to pay them.

This needs no further editorial comment.

ENOUGH DOCTORS AND ENGINEERS?

The Scientific American Magazine for September, 1951, is a special issue on Human Resources of the United States. All of the articles have some relevance to public health, but the one on engineers by Karl T. Compton, on doctors by Alan Gregg, M.D., and on population by Frank W. Notestein are particularly important.

Dr. Compton finds that 400,000 engineers comprise the country's third largest profession. There is nevertheless an acute shortage of engineers. How serious that is for public health is indicated by the fact that Dr. Compton found only 67 sanitary engineers among 190,000 undergraduate enrollments in engineering colleges for 1949 and 1950. As the chief long-term remedy, Dr. Compton suggests a correction of the recent widespread impression that the country is oversupplied with engineers.

Dr. Gregg finds we have 209,000 doctors. He outlines all the reasons why there is an increasing demand for physicians' services, the chief one being the high quality of the service. "The most important thing we can do to increase the number and quality of doctors," says Dr. Gregg, "is to give more financial support to medical schools." He contrasts the ten million dollar deficit they incurred with the more than four billion spent on tobacco and smokers' supplies during the same year.

Both of these articles are worth careful study, as indeed is the whole issue. It is handsomely produced with extensive graphic presentation and decidedly humorous drawings. 24 W. 40th St., New York 18, 50¢ an issue.

The September issue of *Fortune* also carries an analysis of the engineer situation. It has the title "A Helluva Shortage of Engineers. It Will Get Worse—Into 1954—Before It Gets Better." The article contains an interesting discussion of the rise of the engineering profession as well as an analysis of the causes of the shortage. The problem is related to the shortage of scientists in general. Worth reading.

DENTAL APTITUDE TESTING PROGRAMS

The American Dental Association, with the 1951 academic year, initiated an aptitude testing program for the 42 dental schools of the United States. Testing of students applying for admission to the 1951 classes was completed during the past summer and testing for the 1952 applicants begun. The initiation of the program was preceded by a five-year experimental period in which the efficiency and effectiveness of various types of tests in predicting the dental school achievement of students were studied. The Association has prepared a brochure describing the testing program, copies of which are available from any dental school.

The program is under the direction of Shailer Peterson, secretary of the Council on Dental Education. He reports that a number of articles on the program will be prepared for educational journals in the coming months. He believes "a great deal of information is being gathered which will be important to the entire area of aptitude testing as well as to the more restricted field of

aptitude testing as it applies to the health professions."

PUBLIC WELFARE SALARIES

The Joint Merit System of Montana which serves four state departments including health, public welfare, and mental hygiene, in August, 1951, published a survey of salaries in welfare departments of the separate states. Reports were received from 37 of the 48 states on six classes of positions. Perhaps the most interesting fact that appears in the charts that portray salaries is the relative position of the states with respect to the separate jobs. New York, for example, is at the top for state field supervisor, director of child welfare services and child welfare consultant, but is 17th among 37 in caseworker salaries. Virginia is third in salary paid the director of public assistance, second in that of child welfare consultant, sixth in three other categories, but 25th among 35 states in what it pays the state field supervisor. Iowa is at the bottom of each category except one in which it yields to Mississippi. This is a situation that is largely paralleled in the health field and explains to a great extent why practically all district health officers as well as many other positions remained unfilled in Iowa's Health Department. Pennsylvania runs the gamut of rank from 5th place for each state field supervisor and director of auditing and finance to 34th among 37 for caseworker.

Since the report is based on range of salary for the position, rather than on the specific salary of the incumbent, such factors as the qualifications and length of service of the incumbent should have a minor effect on the results. Job definitions probably have some effect however. This is indicated by the fact that Montana's position in the scale of each of the various categories ranges from 30th to 33rd place in arrays ranging from 33 to 37 states.

The report does not indicate the date to which the survey applies, but it is presumably early summer, 1951. Melvin P. Martinson is the Merit System Supervisor, to whom requests should be addressed. 148 Sam W. Mitchell Building, Helena.

ILLINOIS STUDIES ITS OWN SALARIES

Average salaries of 14 categories of full-time employees in local health departments in Illinois as of July 1, 1951, have recently been tabulated by the state health department. The report covers minimum and maximum salaries of 259 workers in county departments and 142 in city departments, exclusive of Chicago. More than one-third were staff nurses and nearly a fourth were clerks.

Included with the report of the study is a list of minimum qualifications prescribed by the state health department for 16 different categories of personnel in local health departments.

Both are available from Dr. Charles F. Sutton, Deputy Director, Division of Local Health Services, Illinois Department of Public Health, Springfield.

ADOPTS CLASSIFICATION, PAY PLANS

"Phoenix, Arizona, has adopted a position-classification and pay plan covering most of the 1,300 city employees, and including a cost-of-living adjustment feature based on the November, 1950, index. Outlay of salaries and wages was increased 9.3 per cent as a result of this action. To broaden understanding of the plans a committee of 16 employees appointed by management and 16 elected by the employees was formed. They ironed out differences at a series of meetings held over a period of eight weeks. The city manager, personnel director, and a department head will constitute a permanent personnel committee to study requests for changes in classification or pay and make recommendations to the

civil service board, city council, or city manager as circumstances require."—*Public Management,* July, 1951.

AN UNFORTUNATE LEGAL QUIRK

In 1949 the Illinois Legislature amended its statutes making it mandatory for employees of municipal governments, including counties, to be covered by the provisions of the municipal retirement fund Act which became effective January 1, 1951. The state's attorney general has given his opinion that the Act applies to employees of single county health departments, but not to those of multicounty departments.

PSYCHIATRIC NURSING PERSONNEL FACTS

The American Psychiatric Association has recently published facts and figures for 1950 on nursing personnel in mental hospitals of the United States. Included are data on salaries; state by state, personnel policies, patient-personnel ratios, and educational programs. Entitled *Psychiatric Nursing Personnel,* the figures were compiled by the nursing consultant to the Committee on Psychiatric Nursing of the Association and published by its Mental Hospital Service. 1624 Eye St., N.W., Washington 6, D. C., 60¢.

MEDICAL ADMINISTRATORS' DUTIES

With the increasingly serious shortage of public health physicians, perhaps it is not too late to mention once more a preliminary survey made by the Public Health Service on the amount of time administrative public health physicians spend on types of work that do not require medical judgment. On the basis of replies received from 173 physicians, holding administrative positions in state health departments, it was concluded that about 30 per cent of time was spent on purchasing supplies, checking and supervising the installation and use of equipment, among other nonmedical activities. While such a study can hardly be definitive, it is useful in pointing up the need for further analysis of the administrator's job with a view to making the best possible use of the limited personnel available.

The study also points to the need for experience in several fields in the finding that specialists in one program were active in related programs, the outstanding example being among state health officers and directors of local health administration. They cannot be narrow specialists.

If you have missed this story, it can be found in *Public Health Reports* of Dec. 8, 1950, or in a news release of the Public Health Service, either of which are available from the Service.

NEW HAMPSHIRE TRAINS TOO

The Clearing House of January, 1951, reported on a program of training laboratory workers in the Richmond Health Department of Virginia. Fortunately, it was not described as unique, for the director of personnel of the State of New Hampshire reports a similar training program in the diagnostic laboratories of the State Department of Health. Beginning in July, 1950, under the supervision of the laboratory director, Laura G. Jacques, M.D., two college graduates with Bachelor's degrees in bacteriology were put in training, rotating among the various divisions of the laboratory. Says the personnel director, Roy Y. Lang, "We are hampered by a lack of professionally trained technicians to conduct a more comprehensive training program; it is the only method by which we are able to recruit technicians."

Our thanks to Mr. Lang for the information. Are there not other items in the Clearing House that suggest to readers further information that might be shared with those who have an interest in "public health salary information and personnel needs"?

Credit Lines

A NEW SOCIAL WORK MAGAZINE

Medical Social Work began publication in September, 1951, as the publication of the American Association of Medical Social Workers. It is introduced with little editorial comment or fanfare, but perhaps these sentences by the president are its *raison d'etre,* "Medical social work needs more current material for the use of practitioners and teachers. We believe members will be stimulated to analyze their practice and to share their thinking with others when there is an available source for publication."

The first issue has three scholarly articles by medical social work practitioners, dealing with the profession's contribution to public health, the distinguishing characteristics of medical social work, and a look into the future of the profession. The journal is published by the national offices, 1834 K St., N.W., Washington, D. C. Chairman of the publications committee is Mary K. Taylor. There is no information, perhaps even no decision yet, as to whether it is to be a monthly or a quarterly. Nor is there information as to annual subscription. Single copies $1.

At the same time come the first issues of the German *Gesundheitsfürsorge,* in part the opposite number of the new American journal. It began publication in April, 1951. But it is a broader journal than the American one, perhaps more nearly a synthesis of the *American Journal of Public Health* and the new *Medical Social Work* journal. This comes out of the fact partly that the social worker in Germany has a more direct function in health teaching than in this country. The journal has two editors, one in the social work field, one in the medical field. If the term had not picked up unhappy connotative barnacles in this country, the title of the German journal might be translated simply as "Social Medicine." Published monthly by Georg Thieme Verlag Stuttgart-O, Diemershaldenstrasse 47. Annual subscription, 8 German marks.

UNEQUIVOCAL STATISTICAL EVIDENCE

The Health News Letter of the Saskatchewan (Canada) Department of Public Health reports a differential of 20 per cent in the infant death rate bebetween organized and unorganized areas, as to public health, of the province. In those areas protected by full-time public health services the infant death rate in 1950 was 27.7, in those not so protected, it was 34.7.

1955 THE BRUCELLOSIS DEADLINE

A lively article entitled "They're Clamping a Ban on Brucellosis" can be found in the October number of the *Country Gentleman.* The paper outlines the vigorous national program being developed, which is aimed at the eradication of brucellosis among dairy herds by 1955. The history of efforts at eradication of the disease among animals, and the problems met in developing the current program are discussed in interesting detail. Independence Square, Philadelphia 5.

"PUBLIC HEALTH IS PURCHASABLE"

With this as a text the August issue of the *Bulletin of the Kentucky Department of Public Health* undertakes to tell the state's citizens what they lack in health services, and what they need to spend to get the least of what they ought to have. The techniques used are repetition, use of color, short sentences, illustrations, and no glossing over of the

shortcomings and failures. Every page boldly states, "Public Health Is Purchasable," and asks "How Much Do You Want To Buy?" Of the state's 120 counties, 56 are without full-time health officers. Bruce Underwood, M.D., is the state's health officer—Louisville.

HINTS FOR STATISTICIANS

The Bureau of Vital Statistics of the Maryland State Department of Health has put down on paper a discussion outline on the principles of table structure which has been used in an inservice training program for statistical personnel and statistical typists. A. W. Hedrich is the chief of the Vital Statistics Bureau from whom the outline should be requested. 2411 N. Charles St., Baltimore 18.

WORTH ACQUIRING

Aids to Community Health Planning is a new loan kit of health promotion literature prepared by the National Health Council to help communities start new health councils—or make existing councils better.

Programs, activities, structure, and financing of health councils are discussed. Divided into six sections, the kit contains more than a score of pamphlets, leaflets, and reprints for the use of individuals and groups seeking to improve their community's health programs. One section is devoted to the step-by-step formation of a council, including sample constitutions and by-laws for both rural and urban councils and for health divisions of welfare councils. There is also a section devoted specifically to local health units.

Sections of the kit are so arranged that they may be parcelled out separately for special use. The kit may be borrowed for a month at a time, with privilege of renewal, or purchased for $2.50. National Health Council, 1790 Broadway, New York 19.

Guard Against Tuberculosis is a leaflet stressing the three Rs that ward off disease—rest, right food, and regular checkup. A new note is a drawing of a human being fighting the germ. His head is an apple; arms, beans; weapons an egg and a bottle of milk; torso, a potato; legs, carrots; shoes, peas. It ought to help dramatize right food habits to children. West Virginia State Department of Health, Charleston. No information on price.

A revised list of *Sources of Motion Pictures on Health* has been prepared by the Committee on Medical Motion Pictures of the American Medical Association. Included are nine pages of addresses of the major loan and rental libraries, the state health departments' film libraries, and references to printed lists and catalogs. It does not include lists of films; these must be obtained from the sources. Copies of the new mimeographed list are available from: Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10, Ill.

ANNUAL REPORTS

The *California Public Health Report* is the 42nd annual report of that state's Department of Public Health. It's a detailed report telling of the many activities of a highly organized health department in a complex industrial state of ten million souls. It should be useful to students, particularly, and to citizens with the knack of reading annual reports. It could also be usefully employed as a basis for a popular brief illustrated pamphlet that would make their health department familiar to all ten million Californians.

In Defense of the Nation—Three Times in 33 Years is the title of the 1950 report of the American Social Hygiene Association. An apt title because it is almost alone among the specialized

health agencies whose responsibilities are stepped up immensely with defense, and mobilization and war. Thus, the report is all about community conditions that predispose to the spread of the venereal diseases. The report is well written and handsomely produced.

Coming out about the same time as the annual report was a four page illustrated leaflet, *Alaska: Vital Outpost*. This has numerous photographs of the soldier's life in this "lonely, rigorous, spectacular—and significant" frontier stronghold. Included is a reprint of articles in the *New York World Telegram* on the housing conditions in Alaska for soldiers—conditions that are a menace to health and decency. American Social Hygiene Association, 1790 Broadway, New York 19.

Children's Fund of Michigan in the 22nd year of its lifetime limited to 25 years, has some pertinent things to say to other funds, in particular those that have "a rather prevalent habit of keeping their affairs . . . under wraps and away from public scrutiny. . . . If the habit of silence prevails in the future as in the immediate past, we may expect a continuous critical attitude by the public and a growing tendency on the part of government toward restrictive action. Of course, one very simple answer to the whole business is for all trust funds to publicize their affairs at regular periods. They owe their right to exist to the friendly and lenient attitude that has characterized the public's outlook toward them in the past. They should remove all proper obstacles to a continuation of that respect and tolerance."

By the will of Senator James Couzens in establishing the Fund its principal and income must be disbursed at the end of 25 years. It has thus tried to develop programs which for their general usefulness would eventually be taken over by the general public. On this basis it will create the Child Research Center and "offer it to the general public as a demonstration of unusal scientific achievement that deserves continued support." The equipment and residual research program of the Children's Fund Laboratory will be transferred to this Center.

Annual Report, 1950, American Cancer Society portrays the Society's history of nearly 40 years by a series of graduated test tubes on the cover, the 1913 one being less than a third the size of 1950's. The report prides itself on a number of items, one of which is that it is the only national federated volunteer organization publishing a consolidated financial report. It initiated this practice in the 1949 report. It has 61 divisions, at least one in each state.

The report is a handsome one, emphasizing the research activities of the Society as well as its public health education activities, particularly in behalf of early diagnosis. It does an especially good job of making graphic the story of some research projects it has supported, even though they did not result in isolating either cause or cure. American Cancer Society, 47 Beaver St., New York 4.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

The Fight Against Tuberculosis in Denmark—*Issued by The National Association for the Fight against Tuberculosis. Copenhagen: Nyt Nordisk Forlag Arnold Busck,* 1950. 133 pp.

This concise statement recording the history of Denmark's fight against tuberculosis is a model of factual presentation. There is little inclination to overstatement.

Although ten persons have collaborated to write the ten chapters, there is but little duplication. The first chapter, by Dr. Gravesen, presents a general survey of backgrounds and the remaining chapters cover treatment, outpatient supervision, the laboratory, bovine tuberculosis, legislation on tuberculosis and public assistance, a brief outline of the work of the voluntary National Association for the Fight against Tuberculosis, and, finally, tuberculosis statistics.

In Denmark there has been a good deal of extrapulmonary tuberculosis, attributable in large measure to the bovine strain of the tubercle bacillus. Throughout, in dealing with bovine tuberculosis or other problems arising in the control of tuberculosis, Denmark has depended chiefly upon education and persuasion, and there has been a minimum of legislation. A fine coöperative spirit is evidenced between the laboratory and the clinic, between practising physicians and tuberculosis officials, and between tuberculosis hospital administrators and welfare officials. The tuberculosis patient and his family are well looked after, from diagnosis to complete rehabilitation.

During the last ten years Denmark's tuberculosis mortality has been the lowest of any country in the world, being 19 in 1949. BCG is recommended to all young tuberculin-negative persons, the feeling being that with vaccination, tuberculous meningitis and miliary tuberculosis may be prevented should natural superinfection occur.

JOHN H. KORNS

Tomorrow's Horizon in Public Health—*Transactions of the 1950 Conference of the Public Health Association of New York City. Jamaica, N. Y.: Public Health Association of New York City,* 1950. 109 pp. Price, $1.00.

This small volume is a discussion by outstanding leaders in public health and economics of trends in public health. The following public health problems are discussed: The Future of the Voluntary Health Organization, The Newer Epidemiology, Nutrition in the Light of the New Epidemiology, Tuberculosis in the Light of the New Epidemiology, Permutations in Psychiatry and Public Health, Public Health and the School, The Responsibility of the State, Public Health and the Public. It is impossible, of course, to cover all trends in public health in such a small volume. However, the material that is presented is extremely stimulating and the direction for the future is interestingly based upon the not too far distant past.

It is apparent that we cannot slacken our efforts in the control of communicable diseases, even though at present they are moderately well controlled. Due to the success with communicable diseases, however, time, effort, and money are now available for attempts to control certain chronic diseases such as cancer, heart disease, and mental disease. Since many of the tools for the control of these diseases are unde-

veloped, this is obviously one of the fields for active study. Methods of application of present knowledge must also be developed.

It is generally accepted that the government will play an increasing role in the program for better health for the public. Although the trend is toward federal support and supervision, it is emphasized that only through local interest, support, and direction can the desired ends be achieved economically.

Those who do a day by day task in public health and who are at times frustrated or uncertain of the proper direction for their future efforts will be given heart by the fact that even the experts are not entirely sure of the future course of public health.

HAROLD W. BROWN

Swimming Pool Data and Reference Manual—1951 (*19th ed.*). *New York: Beach & Pool,* 1951. 144 pp. Price, $3.00.

This series of articles was prepared with a view toward getting pool owners and operators interested in the particular facility or process discussed and on the accompanying pages advertising such products. This indirect selling method has some merits in that many of the articles are educational and present possible solutions to real problems.

Such articles deal with the use of special or new construction methods or materials, especially for smaller pools; and an impartial discussion of paints, especially rubber paints versus powder types. Other construction discussions included suggested solutions to two objectional pool problems, condensation and rust stains. One article devotes considerable discussion to the problem of estimating the size of a pool for a particular community. One discussion is devoted to the diatomite filter system and its comparison with other methods. Of special interest is a comprehensive outline of revenues and expenditures illustrating the economics of operating a pool.

The principal value to persons in the public health field is the practical discussions and the use of this publication as reference material for equipment and supplies pertaining to the design, construction, and operation of swimming pools.

C. W. KLASSEN

Destructive and Useful Insects—Their Habits and Control—*By C. L. Metcalf and W. P. Flint* (*3rd ed.*). *Revised by R. L. Metcalf. New York: McGraw-Hill,* 1951. 1004 + XIV pp., Index 67 pp. Price, $10.00.

Every health officer of experience knows that there are many questions presented to the local health department which are outside its scope and function. Perhaps they are just inquiries, or complaints about such matters as earwigs, termites, fleas, wasp nests, etc. Three courses are open in handling these matters: (1) An abrupt statement that "such things are not the job of the health department"; this does not endear the health department to the public. (2) A reply that "the department has no responsibility, but some other department of government can do something"; this is better, but it looks like "buck passing" to the average citizen. (3) A request to "hold the phone a moment and we'll see what we can find out for you"—then getting a book, and giving the information, with helpful hints as to what agencies, public or private, can be of assistance; this builds good will for the department.

Since many of the complaints which come in to a health department are concerned with insects and arachnids, a practical book on these animals is a useful item in a health department which has an eye to good public relations. For this purpose the new third edition of *Destructive and Useful Insects* is admirably adapted.

As compared with the second (1939)

edition, the third has been somewhat expanded (90 pages) especially in Chapters 9 and 10, dealing with insecticides and apparatus for their application. The new insecticides have been presented adequately for most purposes, and concisely. Chapters 22 on pests of animals and 23 on insects affecting the health of man have also been revised and brought up to date.

The illustrations are excellent, and the format and typography good. It is a pleasure to see this standard manual revised so as to continue its usefulness.

HAROLD F. GRAY

Good Health for You and Your Family—*By E. Patricia Hagman, Editor. New York: Barnes,* 1951. 305 pp. Price, $3.75.

This volume, an excellent reference, has been prepared from publications of the Health and Welfare Division of the Metropolitan Life Insurance Company. As the editor indicates, it is not intended to be a "doctor book," but rather a source book for every individual and family.

The subject matter is organized into four sections: Part I, Hints for Good Health; Part II, Common Diseases and Disorders; Part III, Child Care; Part IV, Safety and First Aid.

Emphasis is placed upon health rather than disease; on the "do's" instead of the "don'ts." Although some of the discussion veers to the technical, most of the text is simply and clearly written for the reader's information. Part II, on diseases and disorders, retains much of the emphasis on positive health practices which are aimed at avoiding, alleviating, or controlling these conditions. Specific diseases are discussed under such headings as What It Is, What Causes It, How You Get It, How You Prevent It, How You Take Care of It.

A disadvantage to easy reading is the uniform appearance of the printed page, with a lack of sufficient difference between topic headings and the general copy. One might wish that the publishers had drawn upon the experience of the Metropolitan in designing pamphlets as well as the experience in simplifying language.

The index is excellent, although brief.

This reviewer would agree with the publisher's comments on the book jacket that "it is comprehensive, scientifically correct, clearly and understandably written." A book worth having in your library and recommending to families and individuals. LOUISA ESKRIDGE

Educators Guide to Free Films.—*Compiled and edited by Mary Foley Horkheimer and John W. Diffor, John Guy Fowlkes, Educational Consultant (11th ed.).* 462 pp. Price, $6.00; **Educators Guide to Free Slidefilms.** Edited by Patricia A. Horkheimer and John W. Diffor (*3rd ed.*). 151 pp. Price, $3.00. *Randolph, Wis.:* Educators Progress Service, 1951.

For those who rely wholly or in large measure upon free motion pictures to implement educational programs, no reference manual is more indispensable than the annually revised *Educators Guide to Free Films.* It is excellently indexed by subject, by source, and by title. Each listing is succinctly described for content, date of release, length in reels and in minutes, besides giving details regarding color, sound, and millimeter size. The name of the sponsoring agency or commercial company is stated in most cases, so that the *Guide* user can determine at a glance how a film may be slanted. Complete information about where the film may be borrowed is contained in a well arranged back section of this 462 page volume.

For health workers, the section on health, which is subdivided under various categories such as first aid, health and social hygiene, nutrition and diet, and recreation, seems to contain useful and

pertinent listings. Two other subdivisions under health, labeled respectively "Entertainment" and "Sports" contain titles that the professional worker might consider less applicable to a health education program. "Infield Play at First and Third' and "Parade of Comic Balloons" (the R. H. Macy annual extravaganza) seem at least a little remote in their relationship to health teaching.

This admirable guide would be additionally helpful to educators if it included the age level or grade level for which each film is most suitable.

The same publisher has just released the third annual edition of *Educators Guide to Free Slidefilms*. It, too, is a competent, comprehensive reference volume.

HULDA KLOENNE

Diagnosis and Process in Family Counseling — Evolving Concepts Through Practice—*Edited by M. Robert Gomberg and Frances T. Levenson. New York: Family Service Association of America*, 1951. 243 pp. Price, $3.75.

These collected papers, prepared by staff members of the Jewish Family Service of New York City, should have value for public health workers in two ways: First, they present a vivid picture of services we may expect through referral to such an agency; and second, they reëmphasize and illustrate the influence of living experiences upon the individual, especially the dynamics of family interrelations.

Since the establishment of Social Security provisions for meeting material needs of large numbers of our citizens, some of the less defined functions of social workers have been steadily developed and put into practice. While it is probable that there are different views among family service workers about their roles, certainly the principles and practices presented here will give an outsider better understanding of the direction they are taking. With this, we in health services should be better able to enlist their help and to coöperate with their efforts, just as we are learning to work more effectively with medical social workers.

The discussions provide ample evidence that the professional person working with people needs not only to understand personality growth and development, but also to possess "a sound knowledge of the helping process." Basic truths in new guises are presented, stimulating us to consider our own conscious and unconscious reaction to those with whom we work. Case illustration and interpretive comment emphasize the truth that behavior is very often not what it seems, that its motivations have roots in the past, and that current interpersonal relationships often reflect earlier conflicts. One is encouraged to recall that the individual does not function in a vacuum but as a member of a group, usually the family, and that family interaction colors not only the present, but the future as well. Reinforced, above all, is the concept that no one is helped unless he himself actively participates in the process.

Though this is a collection of papers, the editors (who also contributed) have provided a framework by ordering the material into six parts, which, together, give us the assumptions, practice, and staff relationships existing in the agency. General principles are simply and clearly presented, and are richly illustrated by case material. The distinction between a client's counseling and psychiatric needs is clearly drawn; the analysis of process and method is careful and concise.

In addition to increasing our understanding of family service and providing suggestions to us for improving our own work with people, this collection will prove thought-provoking reading.

DOROTHY WILSON
DOROTHY ROBERTS

Insects and Hygiene: The Biology and Control of Insect Pests of Medical and Domestic Importance in Britain—*By J. R. Busvine. London: Methuen,* 1951. 482 pp. Price, 20*s.* net (approximately $4.20).

Dr. Busvine is a Lecturer in the Department of Entomology at the London School of Hygiene and Tropical Medicine. He has produced a volume of extraordinary coverage in the allied fields of medical and pest entomology. It encompasses a wealth of biologic and control information concerning insects and arthropods that cause or carry disease and those of more general importance—especially to the housewife—because of their destructive habits or their downright obnoxiousness.

Following a collection of interesting historical notes, the next part (about 11 per cent of the book's pages) is devoted to the general biology of insects, their structure, classification, anatomy, physiology, and ecology. The next section (15 per cent) is concerned with measures to prevent and control insect menaces. This includes a discussion not only of mechanical, physical, and chemical means of destruction, but also the organization of insect control programs.

The major portion of the volume, almost three-fifths, is given over to the description of arthropod species, divided equally, space-wise, between those of medical importance—houseflies, blowflies, bloodsucking flies including mosquitoes, bedbugs, fleas, lice, mites, ticks, and insects which sting or bite—and the destructive, pestiferous, or nuisance representatives such as roaches, crickets, bristletails, ants, the beetles which infest wood, carpets, hides, and stored foods, the moths which live in clothes, furniture, dried fruit, cereals, etc., book lice, spiders, mites, springtails, earwigs, and certain isopods.

The remainder of the book consists of two appendixes, one biological, the other chemical. The former contains directions for the preservation and transportation of arthropods, lists of insects of hygienic importance, and keys for their rapid identification. The chemical appendix includes (1) a number of tests for the presence of fumigants and contact insecticides and (2) a useful compilation of insecticidal substances, products, and adjuvant chemicals showing their nature and composition, and where and by whom the commercial products are made.

The book is capably written in technical language. It is fully indexed and is illustrated with 58 well executed line drawings and diagrams, many of which are original. "Bibliographies" (reviews or general articles) or lists of "references" to more specific papers, or both, appear at the end of each chapter.

It is to be emphasized that *Insects and Hygiene* was written to deal exclusively with the nonagricultural insect and related arthropod problems in Great Britain. However, many of the pest species included have extensive distributions, and the majority of the techniques and practices can be applied universally. Thus the volume will have general utility in other temperate zone countries. It is, as indicated above, more of a specialized entomologic handbook than a control manual, but it should prove to be very useful to health officers, sanitarian supervisors, applied entomologists, and pest control operators with enough entomologic and chemical background to grasp the scientific jargon.

JUSTIN M. ANDREWS

An Experiment in the Control of Tuberculosis Among Negroes—*By Jean Downes. New York: Milbank Memorial Fund,* 1950. 67 pp. Free.

This painstaking and thorough study of the effect of improved nutritional status on tuberculosis incidence among persons at risk of attack is an important contribution to tuberculosis control. The study was carried on by the Community

Service Society, the Bureau of Tuberculosis of the New York City Department of Health, and the Milbank Memorial Fund.

The study comprises 8 years, 1939–1947. Three years were devoted to improving clinic facilities and home follow-up, and 5 years to the nutritional study.

One hundred and ninety-four Negro families in the Harlem District of New York City were divided into two groups, vitamin and no-vitamin. The groups were exposed to positive sputa in similar proportions, were homogeneous with regard to age constitution, the socio-economic environment was similar, they had comparable rates for living cases of primary and reinfection tuberculosis and were also comparable for past exposure; acute and chronic disease prevailed with about equal frequency.

Vitamins and minerals were prescribed and controlled at the nutrition clinic and through home follow-up. During the investigation, public health teaching for the two groups was not altered.

The socio-economic changes during prewar, war and the postwar periods were closely observed.

Findings showed a reduction in incidence of new cases of reinfection tuberculosis in both groups, but it was greater in the vitamin-mineral nutrient added group. Both family groups showed significant indications of health, a marked improvement in food habits, a keen interest in public health, and a general increased sense of responsibility.

WILLIAM A. SMITH

Introduction to Motherhood—*By Grantly Dick Read. New York:* Harper, 1951. 99 pp. Price, $1.75.

This small volume provides the woman entering upon her first pregnancy the motivation and the information required to accept and prepare for the "natural childbirth" which this British author previously has advocated in *Childbirth Without Fear.* This theme is logically continued in sections which urge natural mother care of new-born, including the "rooming-in plan" for obstetrical hospitals, and breast feeding. These subjects are forcefully presented and most women may be expected to react to the chapters on pregnancy, labor, and delivery with relief from anxiety, although some may be disturbed by the vivid description of the "Four Emotional Menaces of Labor." A discussion of the use of anesthetics and analgesics is especially reasonable and reassuring. In urging the "rooming-in plan" and breast feeding, the author steps out of his role of dispelling fears by stressing unduly the unfortunate consequences of early separation and weaning, either of which may become necessary. The section on husband and wife relationship is excellent.

The discussion of personal hygiene for the pregnant woman is not equal in quality to the rest of the book and the scant and vague attention given to modern prenatal care is surprising. Some of the advice, especially concerning diet, is inconsistent, confusing, and out of accord with recent research.

The reviewer believes that this book has a valuable contribution to make to expectant mothers but that it is uneven in quality, excelling chiefly in subjects close to the author's personal interests. It should be recommended only in conjunction with other texts, preferably with its most useful sections indicated and not as the sole "basic primer" it purports to be. HAROLD C. STUART

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Not Solely an American Phenomenon—Just for the record: fluorine (natural) in British municipal water supplies is found to affect favorably the DMF rates in the mouths of adult, as well as youthful, drinkers of the fluorine rich water.

ANON. Fluorine (an Editorial). *Pub. Health* 64, 11:204 (Aug.), 1951.

Half the People Have "Health" Insurance—You will find this summary of the findings of the Clark study a most convenient reference. Though this department has discontinued summarizing summaries, the temptation to make one quote is irresistible. "Of the 9 to 10 billion dollar medical care bill, medical-care insurance paid about 8 per cent (755 million dollars)."

ANON. The Clark Report on Health Insurance. *Pediatrics* 8, 3:446 (Sept.), 1951.

Sadly Needed Research—Here is an idea that should go further. A committee representative of many diverse —but interested—professions, assisted by experts from the A.M.A. and Public Health Service, met to look into the matter of industrial health education. Members divided themselves into four subcommittees: (1) to see what was already going on in the field; (2) to see what the employees thought and did about their resulting education; (3) to determine if the materials and methods used were any good; and (4) to discover if health services bore out the lessons promulgated.

ANON. Research on Health Education in Industry. *Arch. Ind. Hyg. and Occup. Med.* 4, 2:161 (Aug.), 1951.

BCG in England—The way British health authorities have gone about giving BCG a fair trial and how they hope to measure its usefulness are set forth in considerable detail in this symposium —which you shouldn't miss. For readers who won't look it up it may be revealed that, in general, the English are doing what we also are doing, giving it to non-reactors who are exposed and arranging for long-range follow-up of immunized and controls.

ANON. BCG Vaccination in England and Wales. *Pub. Health* 64, 10:187 (July), 1951.

Pre-paid Pediatrics—In New York's Health Insurance Plan the insured babies averaged 13 physicians' services per year, many of them of a preventive nature. HIP neonatal mortality rate—9 per 1,000 live births—was less than half that of the whole city and almost a third of the country's. How much of this is direct cause-and-effect is anyone's guess.

BAEHR, G., AND DEARDORFF, N. R. Pediatric Services Under the Health Insurance Plan of Greater New York. *Pediatrics* 8, 2:277 (Aug.), 1951.

Just As With Us—"England has grown old suddenly; when public health began a hundred years ago our country died young." Even when discussing the "cruel dichotomy between health and welfare services" in that country, this writer has such a felicitous way of acknowledging his country's social deficiencies that it is a pleasure to read about them.

BROCKINGTON, F. The Care of the Aged. *Canad. J. Pub. Health* 42, 7:275 (July), 1951.

Human Cussedness May Be an Answer—Another plea for municipal water fluoridation which ends with the largely rhetorical question: "If, through the relatively simple and inexpensive process . . . an almost universal dis-

ease can be controlled, why delay any longer?" In a following editorial it is alleged that the Christian Scientists, among others, have been throwing some monkey wrenches.

COX, C. R., AND AST, D. B. Water Fluoridation—a Sound Public Health Practice. *J. Am. Waterworks A.* 43, 8:641 (Aug.), 1951.

"Diplomas & Refreshments"—When a course in milk sanitation was proposed for workers in the dairy industry, four of every ten were willing, three didn't care, and three were opposed. How the course was "sold" and what it consisted of are recounted.

GAVURIN, S. Sanitation Courses for California Dairy Farmers. *Modern San.* 3, 9:16 (Sept.), 1951.

More Than Its Share of Riddles—This paper considers so many epidemiologic peculiarities of whooping cough that it defies intelligible briefing here. I guess you'll just have to read it, if you want to know all that you should about the behavior of this baffling and often neglected disease.

GORDON, J. E., AND HOOD, R. I. Whooping Cough and Its Epidemiological Anomalies. *Am. J. M. Sc.* 222, 3:333 (Sept.), 1951.

It Couldn't Happen to Health Workers—Recent increases in bronchiogenic cancer are an amazing phenomenon without parallel in any other category of malignancy, asserts the writer of the first of two papers. Increases are so astounding as to lead anyone acquainted with the facts to search for an explanation. He discusses probable relationships between rising cancer rates and the 335 *billion* cigarettes now being smoked each year (6 per day for every man, woman, and child). The second paper explores the possibility of street and industrial exposures and concludes that decisive statistical evidence is lacking in these directions. This study too points to tobacco smoking.

GRAHAM, E. A. Some Questions About Bronchiogenic Carcinoma. *New England J. Med.* 245, 11:389 (Sept. 13), 1951, (and) WYNDER, E. L., AND GRAHAM, E. A. Etiologic Factors in Bronchiogenic Carcinoma With Special Reference to Industrial Exposures. *Arch. Ind. Hyg. and Occup. Med.* 4, 3:221 (Sept.), 1951.

Bird's-Eye View—National, state, and local health service relationships in this country are reviewed—with best foot forward—for Canadian consumption. Among some undoubted successes there stands one great failure, the writer points out, and that is our inability to solve our personnel problems. Despite training and recruitment, community programs are losing ground.

MOUNTIN, J. W. The National Health Agency as a Leavening Influence. *Canad. J. Pub. Health* 42, 7:261 (July), 1951.

Fearfully Wonderful Is the Body—Twenty pages solidly packed with ideas about what is known, and not known, in matters of natural resistance to infection may prove hard going to a layman—and all of us except the select few immunologists are of the laity in this field. But the work you do in mentally digesting all the meat in this discourse will prove nourishing indeed. Have you been guilty of repeating: "bacteria do not penetrate the unbroken skin"? You'll find some other easy assumptions demolished, too.

NUNGESTER, W. J. Mechanisms of Man's Resistance to Infectious Diseases. *Bact. Rev.* 15, 3:105 (Sept.), 1951.

News Note—Up to 1942 only two pounds of radium had been mined, yet even this small quantity had killed and/or injured, many, many people. Since then American plutonium projects have meant working with an amount of radiation equivalent to that emitted by *millions* of pounds of radium.

PARRAN, T. Cleanliness and Public Health. *Modern San.* 3, 9:20 (Sept.), 1951.

Base-Lines—This is first of a series

of psychologic studies of children at various ages—made upon practically all the small children of Rochester (Minn.)—which are based upon periodic interviews with mothers, observations, and tests. The parents had had much health education. As in less favored families, finickiness was the feeding problem with the highest incidence. Sleeping difficulties seemed to be of the usual sort but two-thirds of the infants slept through the night. In regard to their children's elimination, the mothers seemed to resort to the same laxatives, lubricants, enemas, etc., that less favored mothers everywhere use.

ROBERTS, K. E., AND SCHOELLKOPF, J. A. Eating, Sleeping, and Elimination Practices of a Group of Two-and-One-Half-Year-Old Children. *Am. J. Dis. Child.* 82, 2:121 (Aug.), 1951.

What Shall British Nurses Do?—It is always more comfortable to consider the motes in others' eyes than to acknowledge our own beams. Perhaps this is why many will enjoy this discussion about the future of public health nursing in Great Britain. Nowadays there are infinitely greater needs for "visitors" (public health nurses) in homes, schools, and clinics than there are visitors to do all the visiting. What's to be done? Limit service to the most insistent need, train auxiliaries, or change the philosophy of public health nursing? Americans will be intrigued by the well mannered exchanges of widely differing opinions reported in the extended discussion.

THOM, B., *et al.* The Health Visitor's Work Under the National Health Service Act, 1946. *J. Roy. San. Inst.* 71, 5:550 (Sept.), 1951.

Not for Human Vaccination—You may be interested to learn that monkeys can now be made immune to poliomyelitis by *feeding* them virus. About a third show some paralysis; another third develop antibodies without becoming paralyzed. Most of the remaining third that failed to produce antibodies were later found susceptible.

MELNICK, J. L., AND LEDINKO, N. Immunity Following Oral Administration of Poliomyelitis Virus to Monkeys. *J. Immunol.* 67, 3:203 (Sept.), 1951.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

AMERICA'S BABY BOOK. J. C. Montgomery and M. J. Suydam. New York: Scribner's, 1951. 441 pp. Price, $3.50.

ARTHRITIS AND THE RHEUMATIC DISEASES. Philip Lewin. New York: McGraw-Hill, 1951. 167 pp. Price, $3.50.

AUREOMYCIN. A REVIEW OF CLINICAL USES. New York: Lederle Laboratories, 1951.

BACTERIAL AND VIRUS DISEASES: ANTISERA, TOXOIDS, VACCINES AND TUBERCULINS IN PROPHYLAXIS AND TREATMENT (2nd ed.). H. J. Parish. Baltimore, Md.: Williams & Wilkins, 1951. 193 pp. Price, $2.50.

BIBLIOGRAPHY OF INFANTILE PARALYSIS, 1789–1949 (2nd ed.). New York: National Foundation for Infantile Paralysis, 1951. 899 pp.

CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS. Vol. II (2nd ed.). Morris B. Jacobs. New York: Interscience, 1951. 1,762 pp. Price, $15.00.

COMMISSION ON NARCOTIC DRUGS, ECONOMIC AND SOCIAL COUNCIL. SUMMARY OF ANNUAL REPORTS OF GOVERNMENTS, 1949. United Nations. New York: Columbia University Press, 1951. 88 pp. Price, $.80.

CONTROL OF COMMUNICABLE DISEASES IN CALIFORNIA. San Francisco, Calif.: California State Department of Public Health, 1951. 228 pp.

COST OF MEDICAL CARE. THE EXPENDITURES FOR MEDICAL CARE OF 455 FAMILIES IN THE SAN FRANCISCO (CALIF.) BAY AREA, 1947–1948. Emily H. Huntington. Berkeley,

Calif.: University of California Press, 1951. 146 pp. Price, $2.50.

DIE LEPTOSPIROSE. Wilhelm Rimpau. Berlin: Urban & Schwarzenberg, 1950. 150 pp.

DOCTOR'S PILGRIMAGE. Edmund A. Brasset. Philadelphia: Lippincott, 1951. 256 pp. Price, $3.50.

EXHIBIT TECHNIQUES. Helen Miles Davis. Washington, D. C.: Science Service, 1951. 112 pp. Price, $2.00.

FOOD AND YOU. Edmund Sigurd Nasset. Springfield, Ill.: Thomas, 1951. 86 pp. Price, $3.00.

FROM DUGOUT TO HILLTOP. Margaret R. Stewart. Culver City, Calif.: Murray & Gee, 1951. 233 pp. Price, $3.75.

FUNDAMENTALS OF NUTRITION. THE UNIVERSITY OF THE STATE OF NEW YORK. Albany, N. Y.: State Education Department. 232 pp. Price, $2.25.

GENERAL MEDICAL CARE PROGRAMS IN LOCAL HEALTH DEPARTMENTS. Milton Terris and Nathan Kramer. New York: American Public Health Association, 1951. 129 pp. Price, $.50.

HANDBOOK OF STATISTICAL METHODS FOR DEMOGRAPHERS. SELECTED PROBLEMS IN THE ANALYSIS OF CENSUS DATA. A. J. Jaffe. Washington: Govt. Ptg. Office, 1951.

HEALTH OBSERVATION OF SCHOOL CHILDREN. George M. Wheatley and Grace T. Hallock. New York: McGraw-Hill, 1951. 447 pp. Price, $4.75.

HEALING TOUCH. Harley Williams. Springfield, Ill.: Thomas, 1951. 367 pp. Price, $6.75.

HOME NURSE'S HANDBOOK. Dorothy Sara and Lucille Gidseg. New York: Wilfred Funk, 1951. 211 pp. Price, $2.95.

HOW TO HAVE A BABY. Robert A. Klein and B. J. Schuman. New York: Hermitage House, 1951. 207 pp. Price, $2.50.

HOW TO RETIRE AND LIKE IT. Raymond P. Kaighn. New York: Association Press, 1951. 149 pp. Price, $2.50.

HUMAN SIDE OF INDUSTRY. TRANSACTIONS OF FIFTEENTH ANNUAL MEETING, 1950. Pittsburgh, Pa.: Industrial Hygiene Foundation, 1951. 102 pp. Price, $2.00.

IODINE, ITS PROPERTIES AND TECHNICAL APPLICATIONS. New York: Chilean Iodine Educational Bureau, Inc. 74 pp.

JOHN SUNDWALL, 1880–1950. Memorial Assembly, April 19, 1951. Ann Arbor, Mich.: University of Michigan School of Public Health. 24 pp.

LAW OF MARRIAGE AND DIVORCE (2nd ed.). Richard V. Mackay. Revised by Irving Mandell. New York: Oceana Publications, 1951. 96 pp. Price, $2.00 cloth, $1.00 paper.

MAN AND HIS YEARS. AN ACCOUNT OF THE FIRST NATIONAL CONFERENCE ON AGING. Raleigh, N. C.: Health Publications Institute, 1951. 311 pp. Price, $3.25 cloth, $1.75 paper.

MANUAL FOR THE MICROSCOPICAL DIAGNOSIS OF MALARIA IN MAN (2nd ed.). Aimee Wilcox. Washington: Govt. Ptg. Office, 1950. 65 pp. Price, $.40.

MEDICAL GROUP PRACTICE IN THE UNITED STATES. G. Halsey Hunt and Marcus S. Goldstein. Washington: Govt. Ptg. Office, 1951. 70 pp. Price, $.25.

MODEL COMMUNITY SURVEY OF LOCAL CHRONIC ILLNESS FACILITIES AND SERVICES. SCOPE AND SCHEDULES (PRELIMINARY). Chicago, Ill.: Commission on Chronic Illness, 1951. Price, $1.00.

NUTRITION FOR HEALTH. H. F. Kilander. New York: McGraw-Hill, 1951. 399 pp. Price, $3.00.

PERIODICALS OF INTEREST TO PUBLIC HEALTH WORKERS. New York: National Health Library, 1951. 22 pp. Price, $.50.

PSYCHOLOGY AND ITS BEARING ON EDUCATION. C. W. Valentine. New York: Philosophical Library, 1951. 659 pp. Price, $6.00.

PUBLIC HEALTH AND MEDICAL LICENSURE IN THE STATE OF MISSISSIPPI, 1938–1947. Vol. II. Felix J. Underwood and Richard N. Whitfield. Jackson, Miss.: Tucker Printing House, 1951. 487 pp.

RATIONAL TREATMENT OF CATARRH. W. Annandale Troup. London: Chaterson, Ltd., 1951. 85 pp. Price, 10s. 6d. net.

RELAX AND ENJOY LIFE. SCIENTIFIC BODY CONTROL. William Miller. New York: Barnes, 1951. 85 pp. Price, $1.95.

STATISTICAL METHODOLOGY REVIEWS, 1941–1950. Edited by Oscar Krisen Buros. New York: Wiley, 1951. 457 pp. Price, $7.00.

SYPHILIS. H. L. Joseph and R. E. Weiss. New York: Nelson, 1951. 171 pp. Price, $5.00.

THOMSON'S MODERN PUBLIC CLEANSING PRACTICE, ITS PRINCIPLES AND PROBLEMS (3rd ed.). John Stephen. London: Technical Publishing Co., Ltd., 1951. 413 pp. Price, 42s.

VITAMIN METHODS. Vol. II. Edited by Paul Gyorgy. New York: Academic Press, 1951. 712 pp. Price, $14.50.

ASSOCIATION NEWS

SOME STATISTICS OF A.P.H.A. MEMBERSHIP

(*See Editorial on page 1413*)

TABLE 1

Ratio of American Public Health Association Members, Each State, to Full-time Employees of Selected Categories in State and Local Health Departments

	Full-time Employees *			*A.P.H.A. Members (Sept. 1, 1950)*	
State	*Total*	*State*	*Local*	*Total*	*Per 1,000 Employees*
TOTAL	24,872	5,514	19,358	10,610	548
Alabama	484	104	380	86	178
Arizona	93	22	71	65	698
Arkansas	220	60	160	45	204
California	2,569	321	2,248	984	383
Colorado	233	47	186	163	700
Connecticut	306	158	148	288	941
Delaware	111	38	73	29	261
Florida	595	118	477	203	341
Georgia	804	201	603	248	308
Idaho	89	21	68	54	607
Illinois	904	216	688	656	726
Indiana	367	183	184	143	390
Iowa	102	94	8	91	892
Kansas	237	64	173	156	658
Kentucky	367	65	302	71	193
Louisiana	496	133	363	131	264
Maine	116	18	98	49	422
Maryland	795	133	662	445	560
Massachusetts	643	279	364	521	810
Michigan	1,107	164	943	475	429
Minnesota	227	94	133	182	802
Mississippi	498	93	405	82	165
Missouri	398	110	288	245	616
Montana	61	34	27	46	754
Nebraska	136	30	106	43	316
Nevada	42	24	18	15	357
New Hampshire	75	61	14	36	480
New Jersey	546	160	386	386	707
New Mexico	152	38	114	49	322
New York	3,974	367	3,607	1,805	454
North Carolina	935	131	804	212	227
North Dakota	83	28	55	36	434
Ohio	1,157	105	1,052	387	335
Oklahoma	323	84	239	82	254

* Information furnished by Division of State Grants, U.S.P.H.S. State data as of Jan. 1, 1950; local data as of Dec. 30, 1950.

TABLE 1 (Cont.)

State	Full-time Employees *			A.P.H.A. Members (Sept. 1, 1950)	
	Total	State	Local	Total	Per 1,000 Employees
Oregon	275	65	210	101	367
Pennsylvania	1,217	695	522	500	411
Rhode Island	102	68	34	72	706
South Carolina	456	91	365	84	184
South Dakota	46	24	22	30	652
Tennessee	651	164	487	239	367
Texas	850	169	681	286	336
Utah	184	36	148	72	391
Vermont	76	76	...	28	368
Virginia	660	116	544	210	318
Washington	474	51	423	177	373
West Virginia	227	60	167	115	507
Wisconsin	387	88	299	177	457
Wyoming	22	13	9	10	454

TABLE 2

Ratio of American Public Health Association Members to Members of Affiliated State Societies

State	Members, State Societies (1950)	A.P.H.A. Members	
		Total (Sept. 1, 1950)	Per 1,000 State Society Members
TOTAL	10,382	6,306	607
Arizona	197	65	330
California, Northern	439	984	1,286
" Southern	327		
Colorado	308	163	529
Connecticut	429	288	671
Florida	658	203	309
Georgia	600	248	413
Idaho	352	54	153
Illinois	1,027	656	639
Iowa	164	91	555
Kansas	309	156	505
Massachusetts	550	521	947
Michigan	689	475	689
Minnesota	380	182	479
Missouri	412	245	595
New Mexico	140	49	350
North Dakota	104	36	346
Ohio	472	387	819
Pennsylvania	274	500	1,825
South Carolina	529	84	161
South Dakota	*	30	...
Tennessee	518	239	461
Texas	694	286	412
Utah	169	72	426
Washington	191	177	927
West Virginia	450	115	256

* Information not available.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Carroll W. Dewey, M.D., M.P.H., Court House, Grants Pass, Ore., Health Officer, Josephine County Health Dept.

Charles L. Hedberg, M.D., M.P.H., 679-C Infantry Post, Fort Sam Houston, Texas, Preventive Medicine Officer (Resident), U. S. Army

Dudley A. Hill, M.D., 388 Brunswick Ave., Toronto 4, Ont., Canada, District Medical Officer, Dept. of Public Health of Toronto

Peter N. Kessler, M.D., M.P.H., Firestone Plantations, Harbel, Liberia, Africa, Physician

J. Philip Owens, M.D., 1104 Sycamore St., Courthouse Annex, Cincinnati, Ohio, Health Commissioner, Hamilton County

Everett M. Stone, M.D., 4050 Main St., Riverside, Calif., Health Officer, Riverside County Health Dept.

Donald B. Thomas, M.D., 67 Hirschfield Drive, Williamsville 21, N. Y., Resident, Public Health Physician, New York State Health Dept.

J. W. Willcox, M.D., Box 245, Carthage, N. C., Director, Moore-Hoke District Health Dept.

Laboratory Section

Benjamin A. Akin, V. A. Hospital, Coral Gables, Fla., Research Asst., Univ. of Miami, Medical Research Unit, Dept. of Bacteriology

Elizabeth B. Austin, 908 San Antonio Ave., Alameda, Calif., Assoc., School of Public Health, Univ. of California

Edward B. Edwards, M.D., C.M., 213 W. 139th St., New York 30, N. Y. Physician, General Practice

Agnes M. Fickling, 433 Edgewood St., Hartford, Conn., Medical Technologist, Hartford Health Dept.

Raymond F. Fricker, 178 Broad St., Providence, R. I., Stewart Pharmacy

Sheldon P. Hayes, Ph.D., M.A., 1300 25th St., Ogden, Utah, Teacher, Weber College, Dept. of Bacteriology

Mary B. Johnson, 718 Winona Ave., Montgomery, Ala., Division Head of Bacteriology, Alabama Public Health Laboratories

Frederick A. Miller, R.M.T., 620 S. Third St., Louisville 2, Ky., Director, State Dept. of Health Laboratories

Manuel G. Soret, D.V.M., V. A. Hospital, Coral Gables, Fla., Assoc. Professor of Bacteriology, Univ. of Miami, Medical Research Unit

Statistics Section

Jean C. Bowman, 640 Mason St., San Francisco 2, Calif., Public Health Analyst, California Dept. of Public Health

J. Nixon Hadley, 5245 10th Place, South, Arlington, Va., Chief Statistician, Health Branch Indian Affairs

Robert Nobuo Hirabayashi, 2203 26th St., San Francisco 10, Calif., Public Health Analyst, Santa Clara County Health Dept.

Frank D. Norris, M.A., 2219 Van Ness Ave., San Francisco, Calif., Public Health Analyst, California Dept. of Public Health

Engineering Section

Mohamed M. Agamieh, M.S., 19 Malek Mozafar St., Rodah Island, Cairo, Egypt, Director of Sanitary Engineering Section, Rural Hygiene Dept., and Chief Engineer Insect Eradication Section

Jesse S. Canady, 211 Fuller St., Fayetteville, N. C., District Sanitarian, Sanitary Engineering Division, State Board of Health

Richard H. Harris, County Health Dept., Pleasanton, Calif., Sanitarian, Alameda County Health Dept.

James B. Monahan, 5844 Magnolia Ave., Chicago 40, Ill., Sanitary Engineer, Kraft Foods Co.

Herbert A. Steinberg, 227 E. Downs, Stockton, Calif., Registered Sanitarian, San Joaquin Local Health District

W. M. White, 1250 5th St., N.E., Hickory, N. C., Senior Sanitarian, Catawba-Lincoln-Alexander District Health Dept.

Edward J. Willis, 3302 Evans St., Morehead City, N. C., District Sanitarian, Sanitary Engineering Div., State Board of Health

Industrial Hygiene Section

Thomas E. Bain, 4205 N.E. 15th Ave., Portland, Ore., Chief of Sanitary Division, Portland Bureau of Health

Food and Nutrition Section

Mary C. Rich, M.A., 1040 N. Delaware, Indianapolis 2, Ind., Director, Dairy Council of Indianapolis

Martha E. Study, M.A., 11 S. Main St., Fond

du Lac, Wis., Nutritionist II, State Board of Health

Vonda A. Webb, M.S., Coahoma County Health Dept., Clarksdale, Miss., District Nutrition Consultant, State Board of Health

Maternal and Child Health Section

Lucia Murchison, M.A., State Board of Health, Wade Hampton Office Bldg., Columbia, S. C., Medical Social Consultant

Joseph Oren, M.D., 17 Lunz St., Tel-Aviv, Israel, Director, Div. of Social Medicine, Ministry of Health

George H. Phelps, M.D., Hynds Bldg., Cheyenne, Wyo., Practicing Physician

Public Health Education Section

Helen L. Becker, College of Agric., Ext. Service, Lincoln, Neb., Health Education Specialist

Caesar Branchini, M.A., Public Health and Welfare Services, Med. Dept., Richland, Wash., Health Educator and Staff Asst., General Electric Co.

Norman E. Gaskill, M.P.H., Box 54, Bunn, N. C., Field Secy., North Carolina Tuberculosis Assn.

Patricia Gray, 311 St. Clair Bldg., Marietta, Ohio, Exec. Secy., Washington County Tuberculosis and Health Assn.

Jerome Grossman, M.P.H., 1831 Maine Ave., Richmond, Calif., Assoc. in Public Health, Univ. of California, School of Public Health

Bernard E. Hughes, Ed.D., 105 E. 22nd St., New York, N. Y., Secy. of Local Program Development, State Charities Aid Assn.

Gene Malecki, 304 Park Bldg., Portland, Ore., State Representative, National Foundation for Infantile Paralysis, Inc.

Edwin H. Nørene, 9005 S.E. Clay St., Portland 16, Ore., Chief Clerk and Health Educator, Portland Bureau of Health

Elena S. Quiogue, M.P.H., 1115 Singalong, Manila, Philippines, Asst. Nutrition Educator, Institute of Nutrition, Dept. of Health, Manila, Philippines

Charles P. Sacoman, Jr., P.O. Box 1665, Santa Fe, N. M., Exec. Secy., New Mexico Tuberculosis Assn.

Virginia E. Torres, M.Ed., M.S., Avenida Menocal 113, Havana, Cuba, Health Educator and Teacher, Ministry of Education, Cuba

Lorraine Vogel, 227 N. Arlington Ave., East Orange, N. J., Student, Harvard Univ., School of Public Health

Richard D. Warfield, M.P.H., 57 Post St., Room 508, San Francisco, Calif., Field Representative, Western Office, American Social Hygiene Assn.

Maude J. Yancey, M.S., M.P.H., 913 E. Green St., Wilson, N. C., Instructor of Health Education, Dept. of Public Health Education, North Carolina College at Durham

Public Health Nursing Section

Eva Barnes, R.N., 433 S. Court St., Visalia, Calif., Director of Public Health Nursing, Tulare County Health Dept.

Leah M. Barskey, R.N., 1021½ Kentucky St., Vallejo, Calif., Director of Nurses, Vallejo Solano County Health Dept.

Vertie C. J. Caswell, R.N., 2350 Lakeview Ave., St. Petersburg, Fla., District Orthopedic Nurse, Florida Crippled Childrens Commission

Wava L. Dixon, 822 E. 6th, Helena, Mont., Director, Public Health Nursing, State Board of Health

O. Lee Forrester, County Health Dept., Hollister, Calif., Supervising Public Health Nurse, San Benito County Health Dept.

Edith C. Oakes, R.N., M.P.H., 10916 Magnolia Drive, Cleveland 6, Ohio, Asst. Professor of Public Health Nursing, Frances Payne Bolton School of Nursing

Margaret Scanlon, 638 Stewart Ave., Ithaca, N. Y., Director, Public Health Nursing, Tompkins County Dept. of Health

Purcelle P. Smith, M.A., 207 Stanford Ave., Berkeley 8, Calif., Consultant, California State Nurses Assn., San Francisco, Calif.

Dolores M. Zeis, 716 3rd St., N.W., Rochester, Minn., Student, Univ. of Minnesota

Epidemiology Section

A. K. Anwikar, M.P.H., L.M.P., Dhantoli, Nagpur, M.P., India, Malariologist in C.P. Government, Public Health Dept.

Marie-Luise Carstens, M.D., M.P.H., Heilstatte Grosshansdorf/Ahrensburg, Hollstein, Germany, Residency, Tuberculosis Sanatorium, Grosshansdorf

Miles E. Drake, M.S., Ph.D., Children's Hospital, Philadelphia 46, Pa., Pediatrician

Siim Lind, D.M., 105 Pleasant St., Concord, N. H., Resident Physician, State Hospital, Concord, N. H.

Robert A. Lopez, D.V.M., Westport-on-Lake Champlain, N. Y., Captain, USAF, Veterinary Corps, 1st Epidemiological Flight, Diseases of Animals transmissible to man

School Health Section

Fred J. Holter, Ph.D., M.A., 888 Riverview Drive, Evansdale, Morgantown, W. Va., Graduate Advisor Professor of Health Education, West Virginia Univ.

Charlotte Owens, M.P.H., 4410 W-LK Harriet Blvd., Minneapolis, Minn., Chief

School Nurse, Board of Education, Minneapolis, Minn.

J. Keogh Rash, M.A., Indiana Univ., Bloomington, Ind., Asst. Professor of Health and Safety

Dental Health Section

Everett A. Price, D.D.S., 514 E. Chamberlin, Dixon, Ill., Public Health Dentist, Lee County Health Dept.

Medical Care Section

Kathleen Allen, M.A., 120 Broadway, New York 5, N. Y., Director of Medical Social Service, National Foundation for Infantile Paralysis, Inc.

John Beeston, M.B., D.P.H., 8006 West 4th St., Los Angeles 48, Calif., Asst. Professor in Public Health, UCLA, Los Angeles School of Public Health

Sam M. Houston, Ph.D., 4611 Riverton, North Hollywood, Calif., Lecturer, Public Health Administration, School of Public Health, Univ. of California, Los Angeles, Calif.

Mildred V. Kendall, 4115 Tompkins Ave., Oakland 19, Calif., Senior Medical Social Worker, Case Supervisor, Fairmont, Alameda County Hospital, San Leandro, Calif.

Harley Libby, Jefferson, Ore., Farmer and President of the Farmers Union Health Assn.

Harvey M. Radey, Jr., 528 Market St., Paterson, N. J., Administrative Resident, The Paterson General Hospital

Unaffiliated

Dr. Irving Marcus, 4819 14th Avenue, Brooklyn 19, N. Y.

Stefano Vivona, M.D., 1463 Beacon St., Brookline 46, Mass., Student, Harvard School of Public Health

A.P.H.A. membership application blank on page XXXV

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Sanitarian — General environmental health activities. Minimum requirements 2 years college work in sanitary science, engineering, or related subjects. Entrance salary based on education and experience, minimum $215 per month.

Milk Sanitarian—Dairy farm inspections; some milk plant work. Minimum requirements, degree in milk technology, sanitary science, engineering, or similar field. Entrance salary $250 per month. Write: Health Officer, Knoxville Bureau of Health, 309 Market St., Knoxville, Tenn.

Charge Nurses and Nurses—in 70 bed state hospital. Five day, 40 hour week. Two years hospital nursing required for charge nurses. Salaries: Charge Nurse, $260; Nurse, $220. Apply to: Superintendent of Nurses, State Tuberculosis Hospital, Gooding, Idaho.

Supervising Nurse and **3 Staff Nurses**—Generalized program; urban-rural community 2 hours from San Francisco. Salary: Supervising Nurse, $3,840–$4,740; Staff Nurses, $3,480–$4,260. Three week vacation; liberal sick leave; retirement plan; car optional. Apply to: E. M. Bingham, M.D., Health Officer, San Joaquin Local Health District, 130 S. American, Stockton, Calif.

Public Health Officer (P-7) — for County of Hawaii. Salary $690 to $773.33, plus $25 monthly bonus. Three years of experience as public health physician, following graduation from a medical school of recognized standing including or supplemented by one year of internship in a recognized general hospital, and supplemented by one year of graduate training in public health.

Chief, Bureau of Maternal and Child Health and Crippled Children—Salary $865 plus $25 monthly bonus. (1) Four years of specialized experience in pediatrics, 2 years of specialized training in pediatrics, and certification by the American Board of Pediatrics; or (2) three years of specialized experience in obstetrics, 3 years of specialized training in obstetrics, and certification by the American Board of Obstetrics. Write air mail to: President, Board of Health, P.O. Box 3378, Honolulu 1, Hawaii.

Public Health Nurse for staff position —Generalized program. Salary based on education and experience. Good retirement system. Car essential. Write: President, Lee County Board of Health, Dixon, Ill.

Senior Public Health Engineer—(1) Graduation from a university or school of recognized standing with a degree in sanitary or public health engineering and 4 years of satisfactory public health engineering experience; or (2) graduation from a university or school of recognized standing with a degree in any other branch of engineering and 6 years of satisfactory experience in public health engineering; or (3) any equivalent combination of experience and training sufficient to indicate ability to perform the duties of Senior Public Health Engineer. Write: Mr. Frank O. Trigg, Secretary, Municipal Civil Service Commission, 6th St. and Walnut Ave., Niagara Falls, N. Y.

Public Health Nurse wanted — with certificate or degree. Salary range $3,929–$4,606. Permanent tenure, vacation, sick leave, 5 day week, retirement benefits, and a $2,000 group life insurance policy free. Must furnish own automobile; reimbursed on a monthly basis. Submit complete brochure of your experience and training. Apply to: Department of Personnel, City Hall, Dearborn, Mich.

Public Health Nurse—for voluntary public health agency. Excellent personnel policies, pleasant surroundings, interesting experience, excellent working conditions and good salaries. Apply to: Director, Visiting Nurse Association, 194 Concord St., Manchester, N. H.

Wanted: **Public Health Nurses**—generalized service. Salary $2,866.55–$3,042.54–$3,218.52. Forty hour week, retirement plan, inservice training, good sick leave. Car not necessary. Experience not required. Write: Superintendent of Public Health Nursing, Cincinnati Health Department, 238 City Hall, Cincinnati 2, Ohio.

Wanted: **Public Health Nurses**—for expanding bi-county health unit in redwood country of Northern California.

Generalized service in urban and rural areas. Five day week, vacation, sick leave, and retirement benefits. Car furnished. Beginning salary $3,600, with yearly increase to $3,780–$4,020–$4,260. Apply to: Director, Humboldt-Del Norte County Department of Health, 805 Sixth St., Eureka, Calif.

Staff Public Health Nurses—for rural counties in Nevada. Vacancy immediately. Salary range $290–$330; $10 yearly increment, 5 day week, 15 working days vacation, accumulative sick leave, retirement. Requirements, 1 year of postgraduate public health nursing education in approved school and 6 months experience in official agency. Apply to: Mrs. Christie T. Corbett, R.N., State Supervisory Nurse, Nevada State Department of Health, 506 Humboldt St., Reno, Nev.

Public Health Educator — for San Diego Department of Public Health. Generalized public health education program in large city-county department. Salary range $360–$438. Car necessary; mileage allowance provided. Applicants must have M.P.H., with major in health education and 1 year of experience as a health educator or in equivalent work. Write: J. B. Askew, M.D., Director, San Diego City-County Department of Public Health, Civic Center, San Diego, Calif.

Communicable Disease Control Director, Vermont State Department of Health —Liberal personnel policies including excellent retirement plan. Connection with medical school. Interested applicants should write: Personnel Officer, Department of Health Annex, South Burlington, Vt.

Health Officer — Washington State. Vacancy exists in a full-time health department in Central Washington for a health officer with an M.P.H. degree. Eligibility for Washington State licensure required. Salary range $8,496–$10,188. Usual Merit System provisions, with vacation and sick leave with pay and retirement. Write: J. A. Kahl, M.D., Director of Health, 1412 Smith Tower, Seattle, Wash.

Health Officer for Seneca County Health Department—Central New York State, about halfway between Rochester and Syracuse. Salary $8,400 plus traveling expenses. Write: Seneca County Board of Health, 68 Fall St., Seneca Falls, N. Y.

Director of Health Education—for voluntary agency in suburban county. Salary range $3,200–$3,600 plus mileage allowance. M.P.H. or M.A. in Health Education desired. Experience desirable but not essential. Write: P.O. Box 5977, Bethesda 14, Md.

Administrative Assistant to County Health Officer, Montgomery County, Maryland, Health Department — Salary range $4,200–$5,000. Under Merit System, including retirement plan. Administrative supervision of personnel, budget, accounting, supply and office records and systems. This health unit is a suburban and rural county of 163,749 (1950 Census), adjacent to the District of Columbia. Community interest is strong, and there is active coöperation of lay groups. The unit contains 86 full-time employees. Candidates should have degree in public health, public administration, business administration, or related subjects. Some experience in a local health unit, including public health education, is desirable. Write: County Personnel Board, Court House, Rockville, Md.

Public Health Physician — as health officer of a newly established county health department. County of 20,000 on Mississippi River in northwestern Illinois. Salary range $7,200–$9,000. Qualified health officer may start above minimum. Write: G. Alzeno, D.D.S., President, Jo Daviess County Board of Health, Stockton, Ill.

Dietitian (A.D.A.)—with 4 years experience as administrative dietitian, to serve as consultant to Division of Hospital Facilities. Salary range $3,780–$4,560. Write: Mr. Thomas Wuichet, Personnel Officer, Ohio Department of Health, Columbus 15, Ohio.

Public Health Engineer—for position as head of public health engineering and sanitation inspection and control work of city health department. Excellent civil service and retirement systems. Beginning salary $5,500, advancing to $6,000 with additional cost of living increases. Write: City Service Commission, Room 716, City Hall, Milwaukee, Wis., for application blank and further information.

Public Health Nurse Supervisor—with public health training. Salary $350–$375.

Junior Medical Technologist—for public health laboratory. College degree. Salary $250–$300. Write: Charles A. Neafie, M.D., Director, Department of Public Health, Pontiac 15, Mich.

Director of Nursing—60 bed general hospital. B.S. or B.A. required, also hospital nursing administration experience and public health nursing experience. Later, position will be Director of Nursing in combined hospital-health department. Starting salary $375. Social

Security. Write: Vergil N. Slee, M.D., Barry County Health Center, Hastings, Mich.

Health Officer—for newly created Egyptian Health Department located in "Little Egypt" section of Southern Illinois and serving the counties of Gallatin, Saline, and White. Position to begin January 1, 1952, or as soon thereafter as possible. Candidate should be prepared to create and maintain a good program of local health service and should have capacity for excellent public and human relations. Salary will depend on experience and training. Write: Mr. Horace Brown, Secretary, Egyptian Board of Health, Shawneetown, Ill.

POSITIONS WANTED

Dentist — M.P.H. Highly qualified, capable. Broad experience in private practice, army, and local public health. Excellent record as program organizer-director. Write: **Box D-10,** Employment Service, A.P.H.A.

ANNOUNCEMENT

Fellowships for Study Abroad

The World Health Organization is offering from 10 to 14 fellowships to the United States. These fellowships for foreign study in the field of health will be available for 1952. The Fellowship Selection Board, established by Surgeon General Leonard Scheele, consists of Dr. Joseph W. Mountin, Public Health Service; Dr. Leona Baumgartner, American Public Health Association; and Dr. Walter A. Bloedorn, Association of American Medical Colleges.

Applications will be considered in various branches of public health or such allied fields as medical or nursing education.

Applicants must be engaged in full-time public health or educational work. Knowledge of the language of the country to be visited is necessary. Nonfederal workers will be given preference. In making selections, the Board will consider the ability of the individual and the importance of the contribution which his foreign study will make to his community on his return. To date, grants have not been made for research activities alone.

All grants made in the past have been for two or three month periods. The World Health Organization provides transportation across the ocean and in the country visited, with a stipend from $160 to $300 a month. Application blanks may be obtained from the Division of International Health, Public Health Service, Washington, D. C. Applications must be filed in triplicate by January 1, 1952.

Advertisement

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

(If you will write for our ANALYSIS FORM, we shall prepare an Individual Survey of opportunities which meet your requirements.)

OPPORTUNITIES AVAILABLE—(a) DIRECTOR metropolitan health department; university center; East. (b) PUBLIC HEALTH NURSE SUPERVISOR; generalized program; $4,200–$4,800; Pacific Northwest. (c) HEALTH EDUCATOR; metropolitan health department; Midwestern metropolis; $4,000. (d) DIRECTOR PUBLIC HEALTH; town of 45,000, near university city; South; staff of 25. (e) INDUSTRIAL NURSING CONSULTANT; state health department; headquarters college town; $4,500–$5,500. (f) HEALTH OFFICER qualified to organize and develop health centers; foreign appointment; (g) CHIEF NURSE; metropolitan health department; generalized nursing program; $6,000; Midwest. (h) HEALTH DIRECTOR; staff of 17; town of 75,000 near medical center, Midwest. (i) PUBLIC HEALTH SUPERVISOR; generalized program including school nursing; college town, California. (j) HEALTH EDUCATOR qualified in community organization work; large city; university medical center; West. (k) Public health physician to direct county health department; well organized, excellent board; $10,000; short distance from Chicago.

WANTED—OPPORTUNITIES — (a) PUBLIC HEALTH PHYSICIAN; 6 years general practice; M.P.H., Johns Hopkins; 6 years experience public health administration. (b) PUBLIC HEALTH NURSING ADMINISTRATOR; B.S. (Public Health Nursing), M.S. (Health Education); 3 years instructor of hygiene and college nurse, women's college; 6 years supervisor, health education, metropolitan department of health. (c) PUBLIC HEALTH DENTIST; B.S., D.M.D., M.P.H., eastern university; year's dental internship; 5 years director of dental health, eastern metropolis. (d) HEALTH EDUCATOR; B.A., M.A., eastern university; 12 years director of health education; associate professor of health education, state university. (e) SANITARY ENGINEER; B.S. (Chemical Engineering); 14 years sanitary engineer, state health department. (f) STATISTICIAN; A.B. (major, Statistics; minor, Mathematics); 5 years, statistical research; 4 years, chief statistician, state department of health.

Please direct all inquiries to BURNEICE LARSON, THE MEDICAL BUREAU, PALMOLIVE BUILDING, CHICAGO.

NEWS FROM THE FIELD

PUBLIC HEALTH RESIDENCIES APPROVED

Twelve states, including 39 local areas, are now approved for a year's residency in public health, which is required for certification of public health specialists by the American Board of Preventive Medicine and Public Health.

The Internship and Residency Number of the *Journal of the American Medical Association* for September 29 publishes the approved list of all medical residencies. These approvals were made by the A.M.A. Council on Medical Education and Hospitals after approval by the American Board of Preventive Medicine and Public Health. Under a tri-partite arrangement, the list was originally compiled by the Committee on Professional Education of the American Public Health Association, which recommended it through A.P.H.A. channels to the Specialty Board and the Council on Medical Education and Hospitals. The A.P.H.A. recommendations were based upon the visits and study of the various states by the Consultant on Accreditation of Field Training Areas, Dr. Haven Emerson.

The accreditation program of the Association is being carried on with the aid of a three year grant from the W. K. Kellogg Foundation.

The approved list follows:

Department of Health	*Location*	*Chief of Service*	*Local Areas*	*Population*	*Stipend (Month)*
California	San Francisco	W. L. Halverson	Alameda County	159,182*	$150–$350
			San Joaquin County	199,414*	
Delaware	Dover	F. I. Hudson, Exec. Secy.	Kent and Newcastle Counties.	145,568	$300
Florida	Jacksonville	W. T. Sowder	Alachua County	56,717	$475–$500
			Dade-Miami	488,689	
			Hillsborough-Tampa	248,536	
			Pinellas-St. Petersburg	157,639	
Illinois	Springfield	R. R. Cross	Cook County	721,148	$416
			Will County	134,499	
Maryland	Baltimore	R. H. Riley	Anne Arundel County	115,000*	[a]
			Baltimore City	940,205	
			Baltimore County	269,362	
			Montgomery County	163,749	
			Washington County	78,000*	
Massachusetts	Boston	V. A. Getting	Brookline	56,952	$420
			Cambridge	120,676	
			Newton	81,736	
			Worcester	201,885	
Michigan	Lansing	A. E. Heustis	Calhoun County	112,243*	$400
			Kalamazoo City-County	126,019	
			Wayne County	398,266*	
Minnesota	Minneapolis	A. J. Chesley	Olmsted-Rochester	47,362	75% of what job will pay
New York City	New York City	J. F. Mahoney	Fort Greene	220,047*	$370
			Jamaica West	278,683*	
			Red Hook	171,196*	
			Tremont	302,827*	
New York State	Albany	H. E. Hilleboe	Erie County	895,620	$350
			Geneva District	89,957*	
			Poughkeepsie District	140,150*	
			Tompkins County	59,186	
			Ulster County	91,172*	
			Westchester County	339,068	
North Carolina	Raleigh	J. W. R. Norton	Charlotte	133,219	$500[b]
			Forsythe-Winston-Salem	145,000*	
			Orange-Person-Chatham-Lee	107,404	
Virginia	Richmond	M. I. Shanholtz	Arlington County	136,000*	$150[c]
Washington	Seattle	J. A. Kahl	Kitsap-Bremerton	73,398	$530–$650
			King-Seattle	731,117*	
			Clark-Vancouver	84,836	

* Estimated.
[a] To be arranged with candidates.
[b] To those planning to work in state; transportation costs only to others.
[c] It is expected that a larger stipend will be available to those who will remain in Virginia.

WHO NEWS

What Goes on in Regional Offices

Africa—The Regional Committee for Africa, heretofore served by a temporary office in Geneva, met late in September to establish a regional office. Chief items on the agenda were choice of a site, nomination of a regional director, and establishment of health programs in Africa for the coming year.

The Americas—The regional office, the Pan American Sanitary Bureau, has been authorized to set up a zone office in Buenos Aires to serve the Argentine, Chile, Paraguay, and Uruguay. Other major field offices of the Bureau are in Guatemala, Lima, Rio de Janeiro, El Paso, and Kingston, Jamaica.

The Directing Council of the Pan American Sanitary Organization met in Washington in late September. A budget of nearly two million dollars was approved for the operation of the Pan American Sanitary Bureau. Dr. Nacianceno Romero, director general of health of Chile, was elected chairman; Dr. Pedro Hugo Peña, minister of public health and welfare of Paraguay, and Dr. Leonardo Somarriba, Nicaraguan minister of public health, vice-chairmen.

Dr. Fred L. Soper, director of the Bureau, announced agreements—the first of their kind with member states—with Brazil and Argentina granting the Bureau diplomatic privileges and immunity, considered "essential to the most efficient functioning of the Bureau in the field." The 1952 program includes broadening of insect eradication projects to control malaria, yellow fever, typhus, and other diseases; acute communicable disease, veterinary public health, and venereal disease programs, as well as training programs and continuation of the Bureau's epidemiological and statistical services.

Europe—The Consultative Committee for Europe meeting in Geneva in September voted unanimously for a European Regional Organization for WHO. The Committee thus reconstituted itself as the Regional Committee for Europe, electing Dr. J. D. MacCormack of Ireland as chairman. A 1953 program is being drafted and a regional director nominated. A nuclear regional office was established in Geneva to succeed the existing special office.

Southeast Asia—In mid-1952 a new enlarged maternal and child health center will be established in Calcutta at the All-India Institute of Hygiene and Public Health. With technical guidance from WHO, it is being financed jointly by the Indian Government and UNICEF. The center is expected to train 60 students yearly from all the countries of Southeast Asia, as well as India. An international teaching staff will be provided for the first three years. The Indian Government has agreed to continue the center at the same level of proficiency after the initial five years.

Currently in progress under the direction of Dr. C. K. Lakshmanan, director of the All-India Institute, is a 15 week international course in nutrition. It is a joint project of the Indian Government, WHO, and FAO. Thirteen medical and 12 nonmedical trainees with WHO and FAO fellowships are in the course.

Eastern Mediterranean—Dr. J. D. Cottrell of New Zealand has joined the staff of WHO as public health adviser to the Eastern Mediterranean Regional Office.

On July 19 the Kingdom of Yemen requested assistance in dealing with a suspected plague epidemic in that country. By July 26, Dr. Hafez Amin Bey, director of the Egyptian Ministry of Public Health's Epidemiological Section had been sent to Yemen by WHO

and the Alexandria Regional Office instructed to give all possible assistance. By mid-August the epidemic had been confined to three small villages on the northern frontier. Plague is endemic in the mountainous Khawlan Province, which is as high as 10,000 feet above sea level and is ordinarily confined to this region.

A medical teaching mission made up of 14 specialists from six countries spent September in Israel, following which its public health unit remained an additional month in Israel while clinical and other specialists went to Iran for three weeks. The Unitarian Service Committee joined WHO in sponsorship of the Israeli Mission.

Mission members worked with specialists in their own fields, gave lectures and demonstrations, visited hospitals and medical schools, and exchanged information and attended conferences. Chairman of the mission was Dr. Leo M. Davidoff, professor of neurosurgery at New York University; director of the public health unit is Dr. Karl Evang, Norway's surgeon general of public health. The mission included eight specialists from the United States, two from Norway, and one each from Sweden, England, and Poland.

Under the UN Technical Assistance Program, WHO has begun a mass venereal disease control project for mass serologic testing and penicillin treatment in Ethiopia. Headquarters are at the Filona Clinic in Addis Ababa.

At the request of the Iraqi Government, Dr. W. E. Holmes is making a four month survey of rural Iraq from the social, economic, and health point of view. His recommendations are expected to be the basis for an over-all plan to improve health conditions of the rural population, with WHO's assistance. Dr. Holmes, of Dublin, is a WHO consultant in the field of rural public health in the tropics. He has done public health work in Malaya, Kuala Lumpur, and Selnagor.

Western Pacific — An International Antituberculosis Center, the first in Thailand, has recently been opened in Bangkok under the direction of Dr. Marcel Mistal, a Swiss tuberculosis specialist. The new center, one of several such demonstration centers created or planned by WHO, is equipped with x-ray laboratory facilities for tuberculin testing and BCG vaccination, and provides nursing services and home visiting. It is designed to train doctors and nurses from countries in Southeast Asia in tuberculosis control work.

The second session of the Western Pacific Regional Committee meeting in Manila in September elected Dr. Regino Padua, Philippine undersecretary of health, as chairman. Dr. I. C. Fang, former chief medical officer of the Chinese Ministry of Health, is director of the Manila office.

The meeting stressed the urgency of the need for supplies. A resolution asked WHO to provide more assistance for equipment and supplies for medical and public health supplies by rebudgeting allocations to countries, suggesting that plans should be more modest and more realistic. It was said that plans were sometimes made outside the countries concerned and in ignorance of actual conditions.

Resolutions for the spread of principles of self care and child care, for improving environmental sanitation in and around ports and airports, and for the training of public health workers were among others adopted. Plans were made for a nursing seminar in Taipeh, Formosa, in 1952 and for a regional mental health seminar at the University of Sydney, Australia, in 1953. The invitation of the Viet Nam delegation to hold the third meeting of

the Regional Committee in Saigon in September, 1952, was accepted.

CUBAN SOCIETY OF PUBLIC HEALTH ELECTS OFFICERS

At a regular meeting in August of the Sociedad Cubana de Salubridad Publica at the Instituto Finlay, Havana, Cuba, the following officers were elected for a period of two years:

President: Dr. Alberto Recio y Forns
1st Vice-President: Dr. Gustavo Cabarrouy
2nd Vice-President: Ing. Luis Radelat
3rd Vice-President: Dr. Horacio Abascal
Technical Director: Dr. Guillermo Lage
Deputy Technical Director: Dr. Antonio Losa
Technical Secretary: Dr. Rafael Calvo Fonseca
Deputy Technical Secretary: Ing. Leandro Goicochea
Vocales: Manuel Martin Escudero
Dr. Ana Pelaiz
Dr. Juan Embil
Dr. Francisco Ortega
Dr. Gabriel G. Regalado
Dr. Maria Esther Zayas

The Cuban Public Health Association is an Affiliated Society of the American Public Health Association.

EFFECT OF NEWER DRUGS ON LEPROSY

The American Leprosy Foundation (Leonard Wood Memorial) has begun a three year investigation into the effectiveness of certain drugs, including the sulfones and streptomycin, which have given promising results at the Carville National Leprosarium. Carefully controlled studies will be carried on at leprosaria in various parts of the world with the coöperation of the governments concerned.

The first research unit is now in process of organization at the Westfort Institution of Pretoria, South Africa. Another unit will be set up at the Eversley Childs Sanitarium in Cebu, the Philippines. Explorations are in progress of facilities in Egypt, Ceylon, India, and Japan for the development of further units.

James A. Doull, M.D., medical director of the Leonard Wood Memorial, and Lucius F. Badger, M.D., leprosy control officer of the U. S. Public Health Service, which operates Carville, are now traveling in the countries mentioned to select facilities in which the investigations will be carried on. The Public Health Service and the Veterans Administration are assisting both financially and with professional services. Financial assistance or drugs are also being provided by a number of pharmaceutical manufacturers as well as an airline.

GROUP PRACTICE—ANNOTATIONS

The American Medical Association has brought its *Annotated Bibliography of Group Practice* up to date (Bulletin 85). It now covers nearly a quarter of a century, 1927–1950. The foreword refers to it as a reference work and says, "we have neither supported nor opposed the ideas of any author but have merely tried to provide the reader of this annotated bibliography with a guide which will help him." The list numbers 317 items. An analysis by years indicates peak interest in 1946 and 1947, in each of which more than one-seventh of the 24 year total of items appeared.

The bibliography was prepared by the Bureau of Medical Economic Research, whose director is Frank G. Dickinson, 535 N. Dearborn St., Chicago 10. Price not stated.

BIBLIOGRAPHY ON REFUSE DISPOSAL

The U. S. Public Health Service has revised its *Bibliography on Refuse Collection and Disposal,* which covered the years 1940–1948. The new edition is for the years 1941–1950. As in the earlier edition, listings are arranged according to the general subject of the article, such as regulations, finances, storage, and collection. Ralph J. Van Derwerker and Leo Weaver prepared the *Bibliography.* Available from the Public Health Service, Washington, D. C., Publication No. 91.

COÖPERATION IN STATISTICS

For the second successive year, the Statistics Section of the American Public Health Association is sponsoring jointly with the Biometrics Section of the American Statistical Association two of the sessions of the 111th annual meeting of the American Statistical Association, to be held in Boston, December 26–28. The two sessions are on the use of administrative medical records for studies of morbidity and on specific problems arising in morbidity investigations, respectively. Among those giving papers are:

Dr. Bernard D. Karpinos, Office of the Surgeon General, U. S. Army
Dr. Barker Sanders, Social Security Administration
Dr. Marta Fraenkel, New York City Department of Hospitals
Dr. Joseph Berkson, Mayo Clinic
A. P. Iskrant, Public Health Service
Jerome Cornfield, National Institutes of Health

Further information about these sessions from Harold F. Dorn, chairman of the 1951 Program Committee, Room 2203, Building T-6, National Institutes of Health, Bethesda 14, Md.

OHIO TRAINS SANITARIANS

A new program of individualized training for new sanitarians has been in operation by the Ohio State Department of Health since early 1951. Elements of the training plan were prepared by a group of representatives from universities and federal, state, and local health agencies. The goal of the planning was to provide more thorough and rapid, but at the same time more flexible, preparation of new personnel. Basically, the program calls for classroom work followed by supervised field experience. Each student is considered as an individual and his classroom work organized in a way best calculated to meet his needs. Following this eight week course at a well equipped center staffed by full-time instructors, the student commences his field training. Here again, individual needs are considered. Each trainee is assigned to a health department similar to the type he will be assigned to for employment. Field work is conducted under gradually decreasing supervision until the student is finally working "on his own." Practical considerations limit the field experience to eight weeks.

Definite criteria have been established for field training centers, an interested, full-time staff, and established programs in eight specified phases of environmental sanitation, among others. It is recommended that there be three regular staff sanitarians for each trainee, with two to one the minimum ratio. The local department should have at least one regular sanitarian per 15,000 population in the area.

A stipend of $150 per month for the training period is paid each trainee. O. C. Carter, assistant sanitary engineer, is in charge of the program.

INTERNATIONAL STUDY OF AIR POLLUTION

The Detroit, Michigan-Windsor, Ontario, area is the center of an international study of air pollution being conducted by the International Joint Commission, in which both official agencies and large industries are participating. Among the objectives of the study are determination of:

a. Sources, nature, and amounts of atmospheric contaminants resulting from combustion of fuel and from industrial processes
b. Effects of meteorological factors on the dissemination and diffusion of the contaminants
c. Effects of pollution upon health, vegetation, safety, and economy
d. Controls necessary and their cost

Canadian and United States teams are conducting the field work. George D. Clayton, chief, Atmospheric Pollution Unit, Public Health Service Division of Industrial Hygiene, is chairman of the United States section of the Technical

Advisory Board. J. F. Barkley and G. M. Atkins are the other United States representatives. The Canadian unit consists of Dr. Morris Katz, Department of National Defense, chairman; C. M. Jephcott, and J. R. Menzies.

LOS ANGELES UNION HEALTH CENTER

The International Ladies Garment Workers Union established a health center in Los Angeles, in February, 1951. The first of 16 such centers operating in large garment industry cities was established in New York City in 1913. In the newest center about 45 staff physicians provide diagnostic services and ambulatory medical care. Diagnostic service is available to private physicians of workers. Supplementary curative assistance for the patient is also available at the request of the family physician. There are about 10,000 workers in 400 shops who are covered by the service.

M. C. Igloe, M.D., diplomate of the American Board of Preventive Medicine and Public Health and Fellow of the American Public Health Association, is director of the Los Angeles Center. Its professional activities are controlled by a Medical Board made up of chiefs of all departments. Marshall Q. Baker, M.D., diplomate of the American Board of Internal Medicine, and on the faculty of the College of Medical Evangelists, is chairman of the Board and chief of staff. Samuel Peluse, M.D., diplomate of the American Board of Otolaryngology and American College of Surgeons, is secretary of the Board.

MEDICAL SCHOOL FOR WEST VIRGINIA

The board of governors of West Virginia University has selected an 80 acre tract of land adjacent to the Monongalia General Hospital near Morgantown as the site of the new four year school of medicine, dentistry, and nursing. The first unit to be constructed will probably be a classroom building to cost about $2 million. It is probable also that arrangements with the Medical College of Virginia at Richmond for the acceptance of 20 of the 30 graduates each year from the two year school at Morgantown will be continued until the opening of the four year school.

AMERICAN STANDARD FOR AUDIOMETERS

The American Standards Association now has available *American Standard Specification for Audiometers for General Diagnostic Purposes* prepared under the sponsorship of the Acoustical Society of America. It describes a standard audiometer and standard procedure that will give doctors and others using audiometers a dependable comparison with the "normal threshold of audibility" as a basis for prescribing hearing aids or other remedial measures. This report is said to assure manufacturers and laboratories testing audiometers with "a uniform method of testing." 70 E. 45th St., New York 17. Ask for Z24–5–1951. 50¢.

TRAINING FOREIGN HEALTH WORKERS

The Division of International Health of the Public Health Service recently made its report on the training of foreign public health workers, arranged and supervised during 1951. Nearly 300 specialists from 50 countries came for training under fellowship programs—Point 4, Department of State, Economic Cooperation Administration, Philippine Rehabilitation Act, World Health Organization, or programs sponsored by occupation authorities of occupied areas. In addition, training was expedited for more than 200 other health workers from 54 countries not on U.N. or United States fellowship, whose training was sponsored by nongovernmental agencies or by their own governments. This is the second year in which more than 500 foreign students have been serviced by the International Health Division.

PERSONALS

PAULO CESAR DE AZEVEDO ANTUNES, M.D., DR.P.H.,† now associate director of the Pan American Sanitary Bureau, Washington, has been designated director of the Faculdade de Higiene e Saude Publica at Sao Paulo, Brazil, succeeding the late G. H. de PAULA SOUZA, M.D., DR.P.H.

PEARCE BAILEY, M.D., since 1946 chief of the Veterans Administration's section on neurology, has been appointed the first director of the National Institute of Neurological Diseases and Blindness, established by Act of Congress a year ago.

HARRY BARTON, formerly sanitarian in the Freehold and Mays Landing offices, is now district consultant in community health organization, assigned to the Central State District Office, New Jersey State Department of Health, Trenton.

JAMES H. BATES, field consultant of the Maine Tuberculosis Association for the past 3 years, is the new executive secretary of the Vermont Tuberculosis and Health Association, succeeding JOHN T. CARPENTER,† who resigned to enter business.

FOREST R. BROWN, M.D., M.P.H.,† has resigned as health director of the Panama Canal Health Department and has joined the staff of the Oklahoma State Department of Health, Oklahoma City.

E. M. BLUESTONE, M.D.,* consultant, Montefiore Hospital for Chronic Diseases, New York City, was elected president of the American Association of Hospital Consultants at its recent annual meeting in St. Louis.

BERT W. CALDWELL, M.D., executive secretary emeritus of the American Hospital Association, who died on July 26, was awarded posthumously the Award of Merit at the annual convention banquet, September 20.

JAMES A. CAMPBELL, M.D., since 1948 assistant professor of medicine, Illinois University College of Medicine, has been appointed dean of Albany Medical College.

A. J. CASSELMAN, M.D.,† chief of the Bureau of Venereal Disease Control for 30 years and director of the Bureau of Laboratories, New Jersey State Health Department, retired as of August 16. He will continue his research work in Camden, where he has charge of the city's Public Health Laboratory.

JOHN W. CHILDS, D.V.M., has been loaned to the Colorado State Department of Public Health from the Public Health Service to serve as chief, Public Health Veterinary Section of the department.

EDWIN L. CROSBY, M.D., DR.P.H.,* director of hospitals, Johns Hopkins Hospital, Baltimore, has been named president-elect of the American Hospital Association, where he will succeed ANTHONY J. J. ROURKE, M.D.,† of Stanford University.

GRAHAM L. DAVIS * has been granted a leave of absence as director of hospitals of the W. K. Kellogg Foundation to direct the American Hospital Association's national study of the financing of hospital care.

AUSTIN V. DEIBERT, M.D.,* medical director, formerly Public Health Service liaison officer with the Economic Cooperation Administration, has been assigned to Honolulu with the joint responsibility of chief quarantine officer, Territory of Hawaii, and medical officer in charge of the Public Health Service outpatient clinic, succeeding LEO W. TUCKER, M.D., who has served in Hawaii since 1947.

LOUISA ESKRIDGE,* formerly consultant in public health education, Pennsylvania Citizens Association for Health and Welfare, is now education specialist, Bureau of Indian Affairs, U. S. Department of the Interior, Washington, D. C.

PROFESSOR GORDON M. FAIR,* dean of the School of Engineering, Harvard University, Cambridge, Mass., recently received an honorary degree of Doctor of Engineering from the Technical University of Stuttgart, Germany, recognizing him "for his leadership and for the promotion of construction of water works."

RALPH T. FISHER,* consultant on community health organization of the New Jersey State Department of Health, has been appointed a member of a technical advisory committee for health education of Yale University in order to assist in a national public health job analysis, a project of the Department of Public Health of the university.

PETER H. FORSHAM, M.D., formerly on the staff of Harvard Medical School and the associated Peter Bent Brigham Hospital, Boston, has been appointed director of the Research Laboratory in Arthritis and Allied Diseases at the University of California School of Medicine, San Francisco.

RUTH J. FRANTZ,* for the past 5 years director of health education, Wisconsin Anti-Tuberculosis Association, is now college health coordinator, Northern Illinois State Teachers College, DeKalb.

E. L. FRASER, M.D., formerly health officer of Campbell County, has been made director of cancer control, Kentucky State Health Department.

T. A. GARDNER, M.D.,† former Springfield (Ohio) health commissioner and recently receiving his M.P.H. from the University of

North Carolina, is now health officer of the Southwest District, Ohio State Health Department.

CHARLES E. GILL, M.D.,† former district health officer in the Berkshire District office of the Massachusetts Department of Public Health, is now medical director of the Brandywine and Edgewood Sanatoria at Marshallton, Del., hospitals operated by the Delaware State Board of Health.

HARRY V. GILSON, associate commissioner of education, New York State, has been appointed director of the newly created Department of Education of the National Society for Crippled Children and Adults, Chicago.

MADELYNE N. HALL, R.N., formerly executive director of the Visiting Nurse Association of Plainfield (N. J.), has been made chief of generalized nursing service, Philadelphia Department of Public Health.

HARRY HERMAN, M.P.H.,† formerly director of health education, Atlantic Visiting Nurse and Tuberculosis Association, is district consultant in community organization, New Jersey State Health Department, assigned to the Southern State District office in Haddonfield.

B. L. HORECKER, PH.D., a scientist at the National Institute of Arthritis and Metabolic Diseases, has been selected for the Paul-Lewis Laboratories Award of the American Chemical Society for his contributions to enzyme chemistry. This is the second year that the award, consisting of a gold medal and $1,000, has gone to a scientist of the National Institute.

HAROLD JACOBZINER, M.D.,* on the staff of the New York City Department of Health since 1931, has succeeded SAMUEL WISHIK, M.D.,* as director of the Bureau of Child Health.

ROBERT W. JONES, III, sanitary engineer, vector control specialist, California State Department of Health, left in July for Djakarta on assignment to the Public Health Division, Economic Cooperation Administration Mission to Indonesia, to assist in the development of a vigorous vector and rodent control program.

ANNE KIMBALL, PH.D.,* director of the Division of Serology, Minnesota Department of Health, is in Rangoon, Burma, to teach serology at the Pasteur Institute there as a member of a public health unit concerned with venereal disease and its relationship to maternal and child health, under the auspices of the World Health Organization.

VERA D. KNICKERBOCKER, R.N., formerly with the Alaska Department of Health, is now director of public health nursing, North Dakota State Department of Health.

HENRY W. KUMM, M.D.,† formerly with the Rockefeller Foundation as representative in Brazil and other South and Central American countries, has been appointed assistant director of research, National Foundation for Infantile Paralysis, to work in close cooperation with research grantees throughout the nation.

D. JOHN LAUER, M.D.,* former assistant professor of industrial medicine at the University of Cincinnati and plant physician for several firms in the Ohio city, has been appointed medical director of the Jones & Laughlin Steel Corporation, Pittsburgh, Pa., to direct and supervise the employee health program of the corporation and its medical facilities in its plants and factories throughout the United States.

GEORGE V. LEADBETTER,† formerly employed jointly by Central Michigan College of Education and the Isabella County Health Department as health coordinator, has been appointed health educator of the Cleveland Health Museum.

RICHARD P. MACLEISH, administrator of the South Haven Hospital, Michigan, for two years, has been appointed to the newly created position of hospital administrator, Colorado State Department of Public Health.

VERONICA MARKS, R.N.,† former assistant district supervising public health nurse, is now consultant public health nurse in communicable diseases, New York State Department of Health.

MALCOLM MASON,† health education specialist for Purdue University, has become health education consultant with the Air Force, Office of the Surgeon General, Preventive Medicine, Washington, D. C. and has been succeeded by GEORGE NUFFER,† health education consultant, Division of Health and Physical Education, Indiana State Board of Health.

G. FOARD MCGINNES, M.D., DR.P.H.,* who until recently has been medical director of the American National Red Cross, Washington, has accepted appointment as medical consultant to the Southern states with the National Foundation for Infantile Paralysis, Inc., offices in Washington, D. C.

CARMEL MCKAY,† formerly field consultant, California Tuberculosis and Health Association, and WALTER JAMES, executive secretary of the Tuberculosis and Health Association of Mobile County (Ala.), have joined the staff of the National Tuberculosis Association Seal Sale Service.

A. H. MEHTA, M.D., D.P.H., who has retired as deputy director general of health

services for the Government of India, and who recently was director of public health of the Punjab, visited New York in September en route to Ceylon on a mission for the International Bank for Reconstruction and Development. He will return to the University of California at Los Angeles for lectures on public health early in 1952.

CHARLES D. MERRILL, ED.M., ED.D.,† formerly associate professor of health education, Florida State University, has accepted assignment with the U. S. Office of Education, Point IV Program, as educational adviser in health and hygiene, with headquarters in Bangkok, Thailand.

HAROLD C. MILES, M.D., M.P.H.,† has resigned as commissioner of health for the Cattaraugus County Department of Health, Olean, N. Y., and has become epidemiologist with the New York State Mental Health Commission, Syracuse, N. Y.

EDNA MOORHOUSE, R.N.,† formerly district supervising public health nurse in the Poughkeepsie District, has been appointed regional public health nurse assigned to the Rochester Region, New York State Department of Health.

CLAIRE MORAN, for the past 2 years employed as therapeutic dietitian at the Mt. Auburn Hospital, has been appointed nutritionist in the Cambridge (Mass.) Health Department.

DAVID MOXON, former agent for the Framingham (Mass.) Board of Health, has succeeded MARY E. LEONARD as executive director of the Middlesex Health Association.

ELEANOR MUMFORD, R.N.,† formerly on the staff of the National Organization for Public Health Nursing, New York, has accepted a position as director of nursing activities, Springfield, Mass., Chapter, American Red Cross, with offices at 275 Maple Street.

C. HENRY MURPHY, M.D., M.P.H.,† formerly assistant director, Wichita-Sedgwick County Health Department, is the newly appointed health officer of the Topeka-Shawnee County (Kans.) Health Department, succeeding THOMAS R. HOOD, M.D., M.P.H.,* now executive secretary of the Kansas State Board of Health.

HARRY A. NEVEL, M.D.,† assistant director, Bureau of Preventable Diseases, Florida State Board of Health, is on a year's leave of absence to work for his M.P.H. degree at Johns Hopkins University, Baltimore.

ROBERT G. PAGE, PHAR.D., instructor in pharmacology, University of Pennsylvania School of Medicine, is in Rangoon, Burma, serving as professor of pharmacology with the Medical College, University of Rangoon.

D. E. PARRY-PRITCHARD, M.D., D.P.H., county medical officer of health and school medical officer of Caernarvon, North Wales, has been appointed by the Minister of Health as a member of the Regional Hospital Board for Wales.

RICHARD F. PETERS, senior vector control specialist, Bureau of Vector Control, California State Health Department, has been appointed chief of the bureau to succeed ARVE H. DAHL,† now assistant chief of the Division of Medical and Health Services, Office of Civil Defense.

CARROLL PFROMMER, who graduated from Temple University in June with a B.S. in Health Education, is now health education assistant, Philadelphia Tuberculosis and Health Association.

MARY F. POLLARD, M.P.H.,† formerly health educator, New Mexico Department of Health, is now consultant in community organization and health education, National Society for Crippled Children and Adults, Chicago.

FRANK L. ROBERTS, M.D.,† assistant dean of the University of Tennessee College of Medicine, and for 12 years county health officer in Gibson County and regional director of public health for West Tennessee, was recently honored for his contributions in public health in the form of a plaque presented at a dinner of the organization of Tennessee public health workers.

MACK I. SHANHOLTZ, M.D., M.P.H.,* has been appointed commissioner of the Department of Health of the Commonwealth of Virginia, Richmond, effective October 1. Dr. Shanholtz has been commissioner of health of the Seminole County Health Department, Wewoka, Okla. He succeeds L. J. ROPER, M.D.,* deceased.

GEORGE A. SILVER, M.D.,* who has served as health officer of the Eastern Health District in Baltimore, Md., and assistant professor of public health administration at the Johns Hopkins University School of Hygiene and Public Health, has been appointed chief of the Division of Social Medicine at the Montefiore Hospital, New York City, where he succeeds MARTIN CHERKASKY, M.D.,† now director of Montefiore Hospital.

HUGH GRANT SKINNER, M.D., has been made health commissioner of Defiance County-City, Ohio, a position vacant since June, 1950.

S. C. SMITH, M.D., a practising physician in Ashland for 30 years, has been appointed health officer of Boyd County, Kentucky, succeeding JOHN WILSON, M.D.

WILLIAM A. SODEMAN, M.D.,* chairman since

* Fellow.
† Member.

1946 of the Department of Tropical Medicine and Public Health in the Tulane University of Louisiana School of Medicine, New Orleans, has been awarded a one year Fulbright lectureship grant at the Calcutta, India, School of Tropical Medicine, where he will teach both clinical and tropical medicine.

LEON STANLEY, formerly with the Alabama Division of Mental Hygiene, is now senior psychiatric social worker, West Virginia Department of Health.

ALEX J. STEIGMAN, M.D.,* professor of child health, University of Louisville School of Medicine, is the recipient of a grant-in-aid from the National Foundation for Infantile Paralysis, Inc., for studies on experimental poliomyelitis.

HENRIETTE STRAUSS,† former manager of the Medical Exhibits Department, E. R. Squibb and Sons, is now on the health education staff of the Tuberculosis Institute of Chicago and Cook County.

OSCAR SUSSMAN, D.V.M., M.P.H.,* senior public health veterinarian, has been made head of a newly created Bureau of Veterinary Public Health, Division of Environmental Sanitation, of the New Jersey State Department of Health.

HENRY TURKEL, M.D.,† consultant to the Education and Training Division of the Surgeon General's Office, U. S. Army, Washington, D. C., and A. EDWARD A. HUDSON, PH.D., M.P.H.,† of North Carolina State College, are on a tour of Army teaching hospitals to demonstrate to officers and enlisted personnel the techniques of bone marrow biopsies and bone marrow infusions.

ALICE WELDY, R.N., has been appointed industrial nursing consultant for the City of Milwaukee, Wis.

MARGARET WELLS, R.N.,† assistant district supervising public health nurse in the Oneonta district, has been made district supervising public health nurse in the Poughkeepsie District, New York State Department of Health.

JAMES L. WHITTENBERGER, M.D., associate professor for the last 4 years, has been promoted to a professorship in physiology at the Harvard School of Public Health in Boston.

MURIEL BLISS WILBUR, PH.D.,* secretary of the Rheumatic Fever Services Committee of the Massachusetts Heart Association, has been made the association's director of health education.

E. G. WILL has been named head of the Chemistry Unit in the Division of Laboratories, Ohio State Health Department, succeeding MERRILL RIEHL, now chief chemist with the Mahoning Valley Sanitary District in Youngstown.

WALKER C. WILLIAMS, a former high school teacher, has joined the staff of the Georgia Tuberculosis Association as a field representative.

J. M. WISAN, D.D.S.,* who for the last 2 years has served at the Brooklyn Veterans Administration Hospital, has been transferred to Washington, D. C., preparatory to taking over the directorship of a new Veterans Administration Dental Training Center scheduled for completion and opening in Chicago in or about July, 1952.

GUSTAVE C. ZUCKWEILER, chief, Environmental Sanitation Bureau, San Diego County Health Department, has retired after almost 27 years in the department.

DEATHS

JUAN B. ASCANIO, M.D.,† Caracas, Venezuela, South America, about a year ago (Health Officers Section).

BERT W. CALDWELL, M.D., executive secretary emeritus of the American Hospital Association, on July 26.

WILLARD J. DENNO, M.D., former general medical director, Standard Oil Company of New Jersey, on August 29, at the age of 75.

THOMAS M. DUGAN, retired, of McKeesport, Pa., on January 9 (Engineering Section).

CARLOS DIEZ FERNANDEZ, M.D.,† of Venezuela, S. A. (Health Officers Section).

RUTH FOSTER, M.D.,† consulting psychiatrist, Northside Centre for Child Development, New York City (Medical Care Section).

CHARLES HOUSER, venereal disease investigator for the Southeast District office, Ohio State Health Department, on June 30.

GEORGE MCL. LAWSON, M.D., DR.P.H.,* professor of preventive medicine and bacteriology, University of Virginia, Charlottesville, on September 20 (Laboratory Section).

JOSEPH I. LINDE, M.D.,* city health officer of New Haven (Conn.), on September 15 (Health Officers Section).

FLORENCE MEREDITH, M.D.,* professor of hygiene and public health, Tufts College, Boston, on August 16 (Public Health Education Section).

WALTER C. REINEKING, M.D., medical director and superintendent of Oaklawn Tuberculosis Sanatorium, Jacksonville, Ill., on July 12, of injuries received in an automobile accident.

MALCOLM H. SOULE, SC.D.,* professor of bacteriology, University of Michigan School of Medicine, Ann Arbor, on August 3 (Laboratory Section).

---

* Fellow.
† Member.